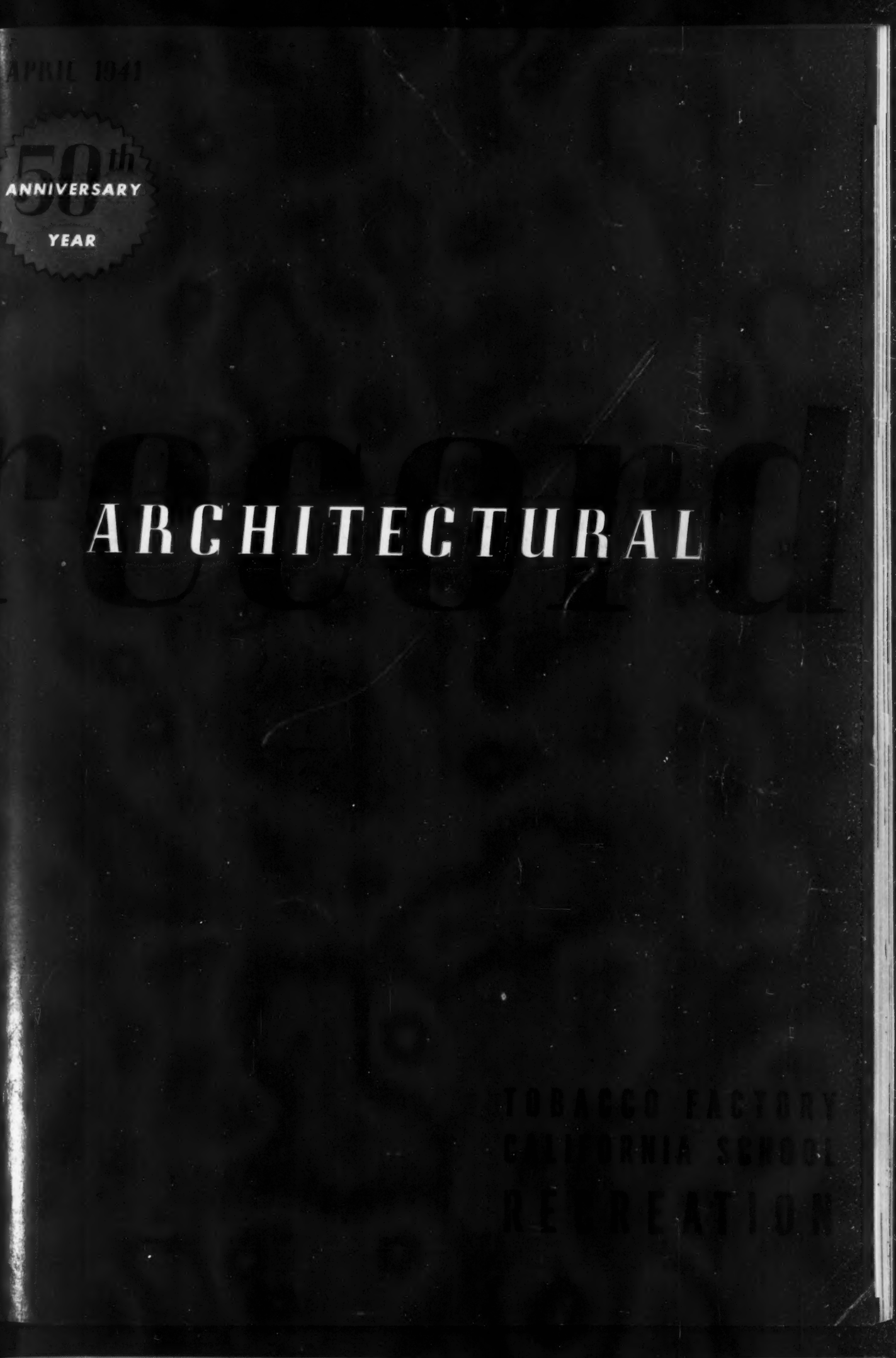
APRIL 1941

50th ANNIVERSARY YEAR

ARCHITECTURAL



Where rust-free hot water is important —you'll find water heaters of *Everdur!*

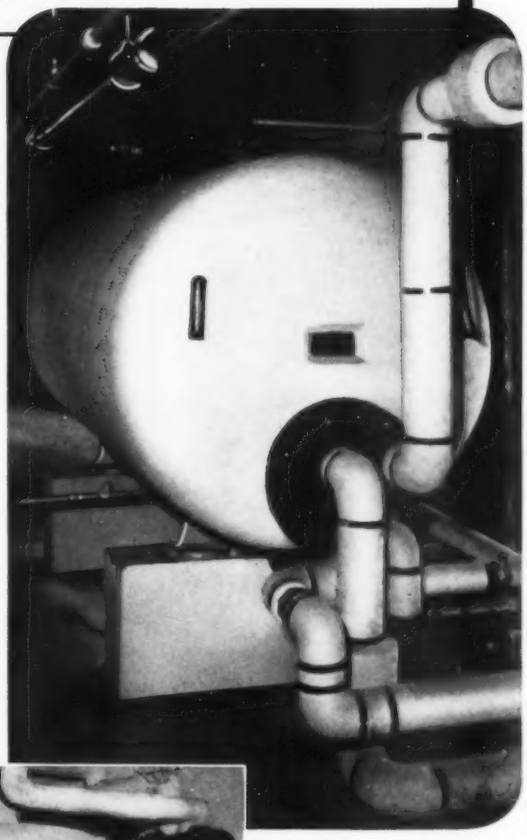
FOR EXAMPLE: HOSPITALS

Hospitals need an abundance of hot water...water without a trace of rust. Besides, limited operating budgets make it desirable to have heating equipment that gives complete freedom from periodic rust repairs. That's why so many hospitals select storage heaters with shells of non-rust Everdur Metal.

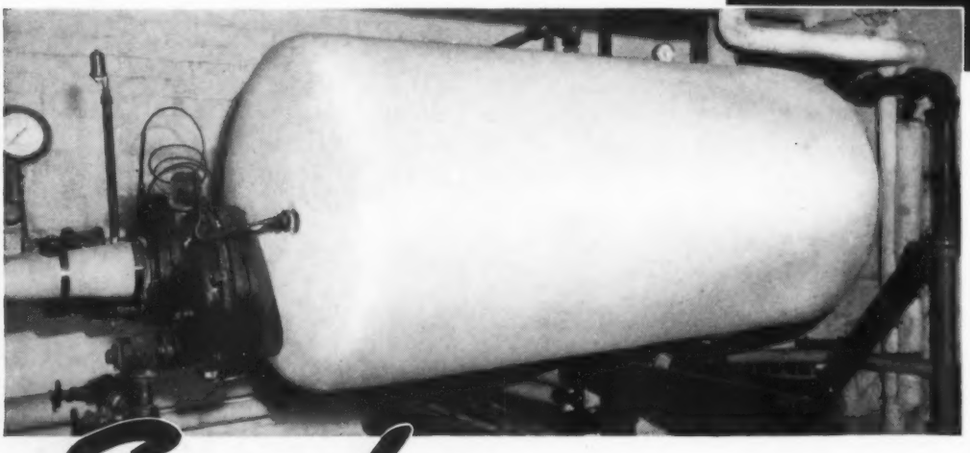
IN COMMERCE, INDUSTRY AND HOMES

All over the country—in schools, mills, laundries and various institutions—rustable heaters are being replaced by long-lived heaters of Everdur Metal. Here are the facts: Nowadays more Everdur tanks and heaters are sold in a week than were built in the entire year 1929.

Everdur—Anaconda's copper-silicon alloy—is rustless, strong, welds readily and is moderate in cost. For non-rust tanks and heaters of all types, consult the leading equipment manufacturers. Remember the name—*Everdur Metal.*



Whitlock Everdur Type "K" storage water heater installed at Pawtucket Memorial Hospital, Pawtucket, Rhode Island



The Exeter Hospital, Exeter, N. H., gets its rust-free water supply from the same type Everdur heater made by The Whitlock Manufacturing Co., Hartford, Connecticut.

Everdur TANK METAL

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THE AMERICAN BRASS COMPANY, General Offices: WATERBURY, CONN.

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ARCHITECTURAL RECORD

COMBINED WITH AMERICAN ARCHITECT AND ARCHITECTURE

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Manuscripts, photographs, and drawings which conform to RECORD'S editorial aims are welcomed. Every effort will be made to return material (if accompanied by stamped, addressed envelopes); but the editors will not be responsible for losses.

Other Dodge Services: REAL ESTATE RECORD, SWEET'S CATALOG FILES, HOME OWNERS' CATALOGS, DODGE REPORTS, and DODGE STATISTICAL RESEARCH SERVICE.

NEXT MONTH

SAFETY IN house design, from the standpoint of health and the prevention of accidents, concerned the architect of 50 years ago very little, but has become a study of major interest for the architect of today. We believe design for safety will come to be a recognized and considered factor with which architects must deal on a technical basis. So the RECORD has made a basic research—the first major study on this subject, so far as we know, by any architectural publication. And in the May issue we will devote 14 pages to ways of incorporating safety in residential design. We'll consider each "sphere of danger" separately, with practical suggestions for removing sources of danger through improved lighting, ventilation, machinery and fire control devices of various sorts.

There will also be a 22-page portfolio of houses noteworthy because of design, plan or construction and, in some cases, safety factors.

The Building Types Study is to be a timely and authoritative one on Multiple Housing, prepared in collaboration with *Catherine Bauer*, housing expert, which analyzes functions in the various housing fields and measures the results attained so far. It will be illustrated, of course, with plans, diagrams, photographs and tables.

And we'll have an eight-page technical feature on Window Design which includes Time Saver Standards.

BEHIND THE RECORD

A statement made in the symposium THE ARCHITECT IN ACTION last month (page 75) has elicited the following comment on orientation from *William Henry Parker*, Architect, of Philadelphia. His letter is given here in full because of the obvious interest it has for all architects.

On page 75 of the current issue of the RECORD, I read with interest and amusement the following: "Only one home-owner in a million might be expected to know that 'a wall facing due north receives more hours of sunshine than a wall facing any of the other seven directions at a latitude of 30 degrees north.'"

This statement you have quoted is incorrect, unless it is limited by the phrase "in mid-summer," and I think you should publish its correction as it is quite misleading.

Inspection of a table of Time Azimuths, similar to No. 71 of the U. S. Hydrographic Office, or Bordwood, shows, for Latitude 30° N.—

1. Some time after 16 May and before 26 May, a North Wall gets more hours of sunshine than a South Wall. This continues true, to an increasing degree, until the solstice, in 21 June; after which the condition wanes until some time after 19 July and before 28 July, when the condition is reversed, and a South Wall gets more sun than a North Wall.
2. After 28 July a North Wall continues to get *some* sun in lessening amounts, always less than a South Wall, until the time of the Equinox (September), when we find a South Wall gets 12 hrs. sun, a North Wall none at all, the sun never being North of East or West, while above the horizon.
3. From the Autumnal Equinox (21 September) all through the long winter months until the Spring Equinox (March) the sun rises South of East and sets South of West, none of its rays touching a North Wall *for half the year!*
4. The condition between 21 March and 16 May is similar to the period after July 28, in that a North Wall gets *some* sun, less than a South Wall, however; the amount of sun on the North Wall increasing until, shortly after 16 May, and before 26 May, the sun on a North Wall exceeds that on a South Wall, and the yearly cycle is completed.
5. Such sun as the North Wall receives in season is always at the very beginning or end of the day, when the altitude is low, the rays weakest and most apt to be obscured totally or in part, by clouds, mist, refraction and density of the atmosphere, adjoining houses, trees, or the like; and when their usefulness for purposes of health and vision are, for most cases, at a minimum.

Consequently, the lines quoted at the head of this letter are not true, and if uncorrected, will lead your less critical readers into false conclusions regarding the subject of orientation. If you look further into the matter you will find that a similar condition exists in the walls running North and South, facing East and West, which receive sun for half the day, every day of the year.

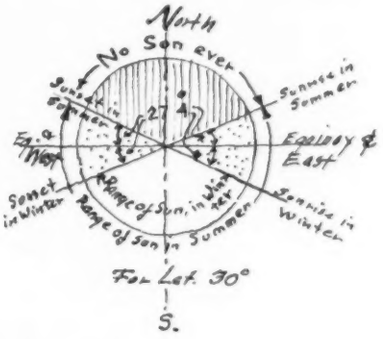
Below is a table which roughly indicates the facts I have discussed, and a diagram showing the main point.

This table, extracted from H. O. No. 71, shows that a North Wall gets more sun than a South Wall, measured by hours, in May, June and July only.

Day	Number of Hours from Sunrise to Noon or Noon to Sunset h.	m.	Number of Hours Between East Point and Noon, or Noon and West Point (Sun on S. Wall) h.	m.	Number of Hours from Sunrise to East Point, or from West Point to Sunset (Sun on N. Wall) h.	m.
Jan. 1	5	03	5	03	None	
Feb. 1	5	19	5	19	None	
Mar. 1	5	42	5	42	None	
Mar. 21	6	00	6	00	None	
Apr. 1	6	12	5	20		52
May 1	6	36	4	10	2	26
June 1	6	54	3	00	3	54*
July 1	6	57	2	50	4	07*
Aug. 1	6	43	3	40	3	03
Sept. 1	6	19	5	00	1	19
Sept. 21	6	00	6	00	None	
Oct. 1	5	53	5	53	None	
Nov. 1	5	24	5	24	None	
Dec. 1	5	06	5	06	None	

*More sun on N. than S. Wall.

Note: These figures only approximate by inspection, and do not allow for slight variations due to refraction and dip, parallax, etc., but the errors should not exceed a minute or so.



"You can see where we began to be afraid of priorities."
—Drawn for the RECORD by Alan Dunn

Another letter comes from *T. Trip Russell*, Architect, of Miami Beach, whose pithy analysis of a situation requires no editorial comment:

We have read with delight your article in the March ARCHITECTURAL RECORD en-

(*Continued on page 110*)

Henry C. Meyer, Jr., M. E., President, Meyer, Strong and Jones, Inc., Consulting Mechanical and Electrical Engineers, New York. Member American Society of Heating and Ventilating Engineers. Author of "Design for Steam Power Plants."

"Ever since the introduction of vacuum steam heating, steam has been the most widely used medium for heating larger buildings," writes Henry C. Meyer, Jr. "With the earlier steam systems, there was overheating due to lack of effective control. But, even then, steam was preferred because it was lower in first cost, prompt in action and easy to install. Today the modern steam heating system offers continuous comfort and low first cost, with heat control that keeps room temperatures at the desired level regardless of changes in outdoor weather."

▲

The Webster Moderator System of Steam Heating has been specified by Meyer, Strong and Jones, Inc. for such installations as Miriam Osborne Home, Harrison and Rye, New York, where it has been in operation for six years, and Hudson House, Ardsley-on-Hudson, New York, where it has been in operation for four years.

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WITH RECORD READERS

Forty Architects Under Forty Show Work at N. Y. Architectural League; Other Types of Public Relations Programs are Tested by Organizations

A NOVEL EXHIBIT IDEA that any young group of architects could adapt to its public relations program was to be found at the New York Architectural League during March, when the public viewed work of "Forty Architects Under Forty" from various parts of the country. Symbolic of the struggles of their profession, the architects forced visitors to enter the exhibit over a series of "hurdles," each representing a commonly encountered obstacle. Barriers passed, the guest found plans, photographs and models of a great variety of building types, including the latest in homes, shops and schools. *C. Dale Badgely* was exhibit chairman.

* * *

THE EXHIBIT METHOD is one of several possible approaches to public recognition of the architect's service being explored by architectural organizations in different parts of the country. New York is also to be the center of a projected 13-week radio broadcast under the auspices of the New York State Association of Architects, modeled on similar programs in California and other states which brought substantial results in business. A committee is charged with the responsibility of raising $5,000 to cover the cost, through solicitation of members and of architects in bordering states within the coverage of the radio station. With 1,000 architects in the metropolitan area, plus several hundred more close by, enough donations should be forthcoming, it is believed, to pay the cost of a worthy campaign for the education of the public and the benefit of the profession.

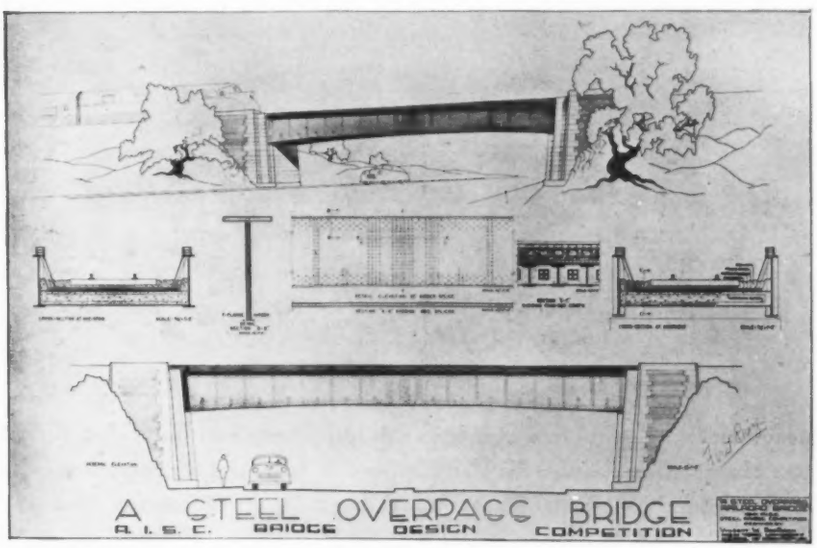
It is planned to reimburse the donors out of a fund derived from a tax to be obtained from architects who receive jobs resulting from the series of broadcasts.

* * *

TAKING A LEAF from the book of certain medical associations which recently tested the possibilities of educational advertising, the Illinois Society of Architects is experimenting with a few insertions in the real estate section of a Chicago paper. The advertisement outlines the assistance an architect can give the prospective builder, and indicates that additional data is available at the office of the Society. "To date our response has been satisfactory to a moderate degree," writes *Paul Gerhardt, Jr.*, president of the group. "It is hoped that we can continue this program sufficiently long to derive concrete benefits."

* * *

THE SOUTHERN CALIFORNIA CHAPTER of AIA, in Los Angeles, has announced a plan whereby exhibits of architects' work, including photographs and sketches, can be placed in the windows of financial institutions and other locations where the public can see them. The material is moved often so interest will not lag.



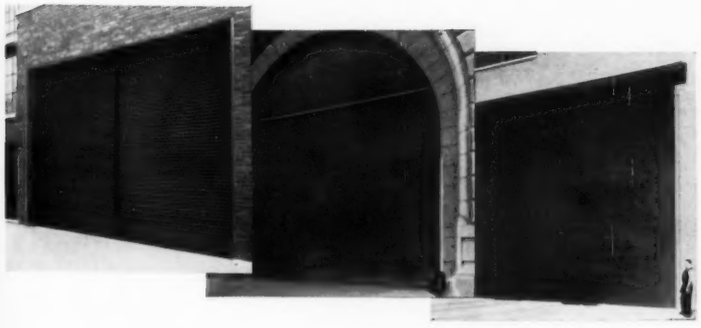
Awards

TO A TEAM from the University of Pennsylvania and the Pennsylvania Academy of Fine Arts went first prize in the fifteenth annual collaborative competition of the Alumni Association of the American Academy in Rome, for students of architecture, landscape architecture, painting and sculpture. The problem was "A Memorial to a Distinguished Composer." The $200 award went to *R. Barney*, architect, *S. Bernstein*, painter, and *A. Kritcheff*, sculptor. Second prize of $100 was given to *A. Reed*, architect, *S. Carter*, landscape architect, *H. Roth*, sculptor, and *Miss V. Needham*, painter, from Syracuse University.

* * *

PRIZES in the Annual Students' Bridge Design Competition have been awarded by the American Institute of Steel Construction as follows: First prize, $200: *Vincent W. SeeBach*, New York University. Second prize, $100: *R. Kenneth Kendall*, Iowa State College. Third prize, $50: *M. R. Harrison, Jr.*, Iowa State College. The problem was a steel overpass bridge carrying a single track railroad over a highway.

(*Continued on page* 10)



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Each of the Mahon installations, shown to the right, have been in service for 10 years or longer. Good for many more years of trouble-free operation.

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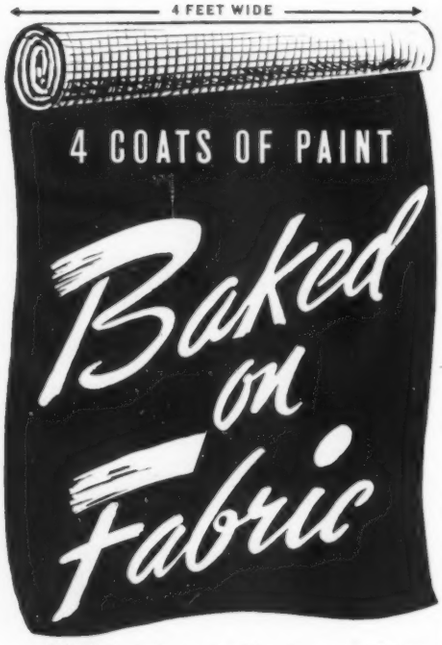
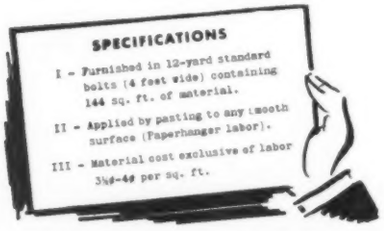
Top Left: Mahon Power Operator—really two separate operators in one—can be operated by power unit or by hand with chain-gear operator. Motor unit may be removed without affecting chain-gear operating mechanism. Center: Standard Manual Chain Gear Operator. Right: Automatic closing mechanism used on Mahon Underwriters' Labeled Doors.



RESULT: Equivalent to brushing three coats of finest paint on a previously canvassed surface.

ADVANTAGES: Provides permanently washable, abuse-resistant surface designed for minimum maintenance cost over long-term period. *Puts a tough hide on plaster.* Gives wallboards and plywoods a rich, substantial decorative finish. An excellent medium for restoring old plaster walls and ceilings. Saves reconditioning expense in any future decoration!

Swatch Book • 47 Plain Color & Texture Effects on Request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WITH RECORD READERS

(Continued from page 8)

THE MEDAL OF HONOR of the New York Chapter of AIA has been presented to *Clarence S. Stein*, former chairman of the New York State Commission on Housing and Planning, in recognition of high professional achievement, particularly in the field of housing. The citation stated: "As a pioneer in the study of housing and a profound student of its sociological as well as its architectural problems, his researches over the past 20 years have been a valuable and influential contribution to our mental attitude toward, and our knowledge of, this important civic problem."

Mr. Stein, with the late *Henry Wright*, in 1924 designed Sunnyside Gardens in Long Island City, N. Y., a $5,600,000 project which provided housing for 1,200 families. Again in association with Mr. Wright, he laid out Radburn, N. J., a residential community free from traffic hazards and then regarded as a revolutionary venture in planning. He is now chief architect for one of the groups in the Fort Greene housing project of the New York City Housing Authority, and housing consultant and associate member of the board of design for the Federal Works Agency.

AIA Committee Activities

A NEW STANDARD FORM of owner's protective bond for use in private contracts has been developed by the Committee on Contract Documents of AIA, of which *William Stanley Parker* of Boston is chairman, in collaboration with the Surety Association of America.

"Construction work covered by the bond must be prosecuted under full supervision of a duly qualified architect," Mr. Parker explains. "This provision obtains for architects long delayed recognition by the surety companies of the benefits that will accrue to them as well as to owners because of competent architectural supervision of construction work.

"Another provision should eliminate vexatious delays in fixing responsibility where a default has occurred. The new bond requires that, in the event of a default, the surety will assume completion of the contract, and become entitled to the payment of the balance of the contract price, or will pay the owner the reasonable cost of completion less the balance of the contract price including retained percentage, within 15 days after the cost of completion has been determined by three responsible contractors."

* * *

THE COMMITTEE ON INDUSTRIAL RELATIONS, under the chairmanship of *Travis G. Walsh* of Cleveland, is endeavoring to obtain the aid of the U. S. Chamber of Commerce, Producers' Council and other national organizations in a movement to combat the Government's policy of delegating the planning function, in the defense program, to contractors. "The precedent established by the Federal Government," Mr. Walsh declares, "has begun to influence local channels of activity." Complaints are reaching the committee, Mr. Walsh reports, that organizations which combine the services of architects, engineers and contractors not only menace the architectural profession but also circumvent state registration laws.

Scholarships

THE SECOND annual competition for the $1,200 Arnold W. Brunner Scholarship of the New York Chapter of AIA is announced by Frederick G. Frost, president of the Chapter. Open to any citizen of the United States engaged in the profession of architecture, the scholarship is awarded for "the pursuit of advanced study in some special field of architectural investigation to be selected by the candidate." Applications will be received by the Chapter until May 1. *John C. B. Moore* is chairman of the committee. Winner of the first Brunner award was *Truman Matthews* of Santa Fe, N. M.

(Continued on page 12)

HERE IS ANOTHER ENTHUSIASTIC REPORT ON THE DA-LITE (Reg. U. S. Pat. Off.) ELECTROL PROJECTION SCREEN

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Roxboro Junior High School
Roxboro Road and St. James Parkway
Cleveland Heights, Ohio

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THOBURN S. DAVIS, Asst. Superintendent

SIGNOR W. DAVIDSON, Principal
BOYD J. PURVIS
S. ZANIE EDWARDS
Assistant Principals

January 28, 1941.

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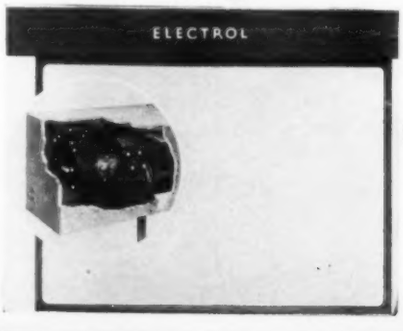
Very truly yours,

S. W. Davidson
Principal.

SWD:S



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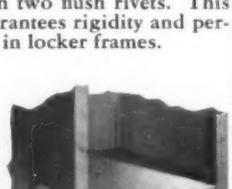

In the illustration at right is shown a cutaway view through the bottom and lower frame channel of the A-S-E Locker. The bottom is flush with the frame for ease in cleaning, and its lower edge rests on the under flange of the channel. Strength and smoothness are assured.

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Name.....

Address.....

City.....*State*.....

WITH RECORD READERS

(*Continued from page* 10)

THE GEORGE G. BOOTH Traveling Fellowship in Architecture for 1941 is announced by *Dean Wells I. Bennett* of the College of Architecture, University of Michigan, and the competition in design will be conducted during the two weeks beginning April 11. This competition is open to all graduates of the school who have not reached their thirtieth birthday.

* * *

TENTH annual consideration of candidates for the Kate Neal Kinley Memorial Fellowship is announced by the committee in charge, of which *Rexford Newcomb* is chairman. The fellowship is open to graduates of the College of Fine and Applied Arts of the University of Illinois and to graduates of similar institutions of equal educational standing, whose major studies have been in music, art or architecture, and who are not more than 24 years old. The period of study is for one academic year, at home or abroad.

Research Institute at Penn State

ESTABLISHMENT of the Ellen H. Richards Institute of The Pennsylvania State College, as a research unit working in the fields of food, clothing and shelter, is announced by *Pauline Beery Mack*, Director of the Institute. Of interest to architects and engineers will be investigations of the suitability of many new materials for the construction of houses or parts of houses, and the performance of various new types of household equipment.

Elections

WILLIAM J. BAIN has been elected president of the Washington State Chapter of AIA . . . Re-elections were those of *Emil Zillmer* to the presidency of the Western Michigan Division of the Michigan Society of Architects, and *Elmer J. Fox* as president of the Architects Club of Chicago . . . *Robert A. C. Gilfillan* is the new president of the Atlantic County Society of Architects, member of the New Jersey Society of Architects.

Died

WILLIAM H. MACMURRAY, 73, in New York City. Mr. MacMurray was a member of the firm of Corbett & MacMurray, one of those retained to design the Rockefeller Center group. More recently it has been engaged in designing the new city prison and criminal courts buildings in Centre Street, New York City, in which Charles B. Meyers was a co-designer. Other buildings designed by Mr. MacMurray's firm were the home office building of the Metropolitan Life Insurance Company in New York, Pennsylvania Light and Power Company office building in Allentown, Pa., George Washington Masonic National Memorial at Alexandria, Va., Horace Bushnell Memorial Auditorium at Hartford, Conn., Henry Stambaugh Memorial Auditorium at Youngstown, Ohio, and Bush House, in London. Mr. MacMurray was a member of AIA and the Architectural League of New York.

FRED LOUIS SMITH, 78, in Detroit. Mr. Smith, victim of a traffic accident, was president of Smith, Hinchman & Grylls, Architects and Engineers, and a member of AIA as well as the Michigan Society of Architects. Among the buildings in Detroit designed by his firm are the J. L. Hudson store, the Dodge plant, Union Guardian Building and Michigan Bell Telephone Building, in Peoria the Hiram Walker plant, and the Rackham School of Graduate Studies at the University of Michigan.

FREDRICK BOWEN GAENSLEN, 71, in San Antonio, Tex. Mr. Gaenslen was one of the founders of the Texas Society of Architects. He designed many schools and churches in the state, among them St. Mary's Church, Incarnate Word College and Church, and Ursuline Academy in San Antonio.

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Hydraulic Press Manufacturing Co., Mt. Gilead, Ohio. Designed & Constructed by The Austin Co.

Pratt & Whitney — Division Niles-Bement Pond, West Hartford, Conn. Architects: Albert Kahn Co., Detroit.

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Industrial Rayon Corporation, Painesville, Ohio. Architects: Wilbur Watson & Associates.

Procter & Gamble Company, Quincy, Mass., Plant.

Office Building, S. C. Johnson & Son, Inc., Racine, Wisconsin. Frank Lloyd Wright, Architect.

Right Column—

Washington Athletic Club, Seattle, Wash. Architect: Sherwood D. Ford. Don M. Clippenger, Associate.

Residence — Albany, Ala. Architect: Sidney W. Little.

Century Apartments, Washington, D. C.

Industrial Rayon Corporation, Painesville, Ohio.

Times-Star Building, Cincinnati, Ohio. Architects: Sam'l Hannaford & Sons.

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TRENDS IN BRIEF

FROM WASHINGTON . . . by KENDALL K. HOYT

New wave of construction activity. . . . USHA gains ground. . . . Prefab on site. . . . Effect of priorities not yet serious. . . . Post-war public works

WITH THE PASSAGE of the lease-lend bill, other measures which were bottled behind it have been released for rapid action to Congress. For defense housing, both the FHA bill for $100,000,000 to stimulate private financing, and the Lanham bill to authorize another $150,000,000 for Federal financing, passed the House last month and are scheduled for early Senate action as we go to press.

These bills, plus large additional Army and Navy appropriations, will generate a new wave of construction activity on top of the present program which has not yet reached its peak.

In addition, another Lanham bill is pending to provide $150,000,000 for public facilities in defense housing areas. Where population has suddenly grown by an influx of workers, present schools, water supplies, sewerage, roads, recreation areas, and the like are inadequate and the need is beyond the resources of the local governments to remedy.

By setting up a fabrication plant on the site and turning out standardized units in quantity, the McNeil Construction Co. and Zoss Construction Co., both of Los Angeles, are putting up 15 houses a day on this 3,000-unit Public Works Administration defense housing project in San Diego, Calif.

The bill gives wide-open executive authority to finance such public works, on the finding of defense need, by any method from a loan with partial payment by the local government to a grant of 100% plus Federal aid in maintenance and operation. As compared with the old PWA system of uniform terms on all projects, this act is likely to be a headache to administer, since the cities all will be clamoring for grants rather than loans. But it makes for speed, which is the main thing. The Public Works Administration will be in charge.

Defense housing procedure

Procedure for setting defense projects in motion is now pretty much cut and dried and will give an idea how the work is channeled through the defense agencies. First the Defense Housing Co-ordinator makes a finding of defense need. It must be established by field studies that there is a shortage of housing for defense workers and that private accommodations in the area are inadequate. On this certification, the project goes up for the President's approval; thence to Federal Works Administrator Carmody who, in turn, assigns it to the Public Buildings Administration or the U. S. Housing Authority for construction.

Public works under the new Lanham bill doubtless will go through similar clearances. In preparation, surveys of municipal facilities have been made in 60 cities by a group of city managers and experts under the direction of *Frank Bane*, Director of the Division of State and Local Co-operation of the National Defense Advisory Commission.

Architects seeking to be retained on such work may well inquire through city officials as to projects which are being recommended for Federal aid and which may go forward after Congress releases the funds.

(*Continued on page* 18)

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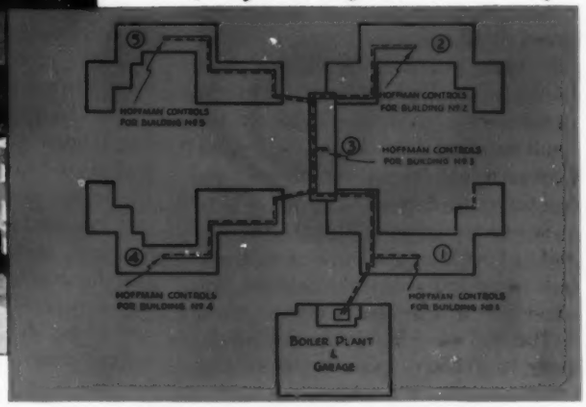
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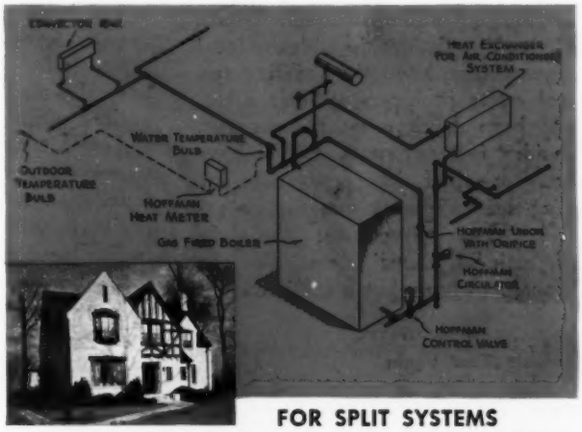

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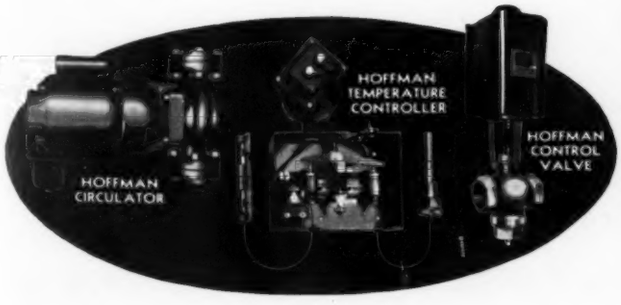

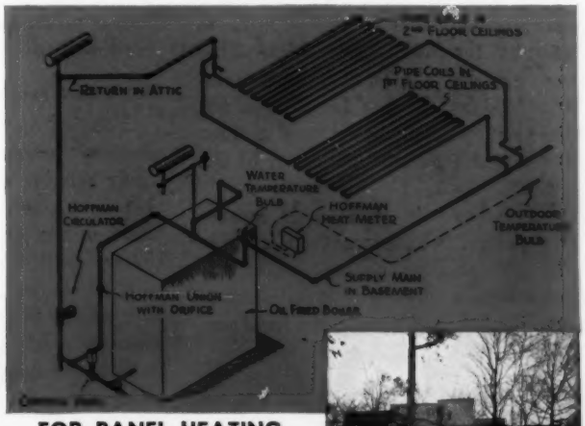

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TRENDS IN BRIEF

(Continued from page 16)

U. S. Housing Authority

Although the USHA seemed a relatively minor factor in the earlier stages of the defense housing program, it has emerged with 41% of the funds provided by the original Lanham Act. The Authority has been assigned 61 projects—38 under the Lanham Act, 20 of its own slum clearance jobs taken over for defense, and three for Army and Navy.

The projects total 20,000 dwelling units of which 2,300 are now open. It is expected that substantially the whole job will be under construction by the end of this month. USHA is likely to get a sizeable chunk of the forthcoming new funds.

In terms of speed, USHA has the advantage of being organized in many cities through its system of local housing authorities, which have a friendly relationship with the local governments, know the building and real estate problems of their areas, and have development plans ready. Besides, in many cases, options have been acquired in preparation for slum-clearance work and can be exercised for defense jobs. The right of eminent domain can also be brought to bear, but a crackdown is avoided except as a last resort.

Decentralized again

Last month we reported that the USHA had centralized its activities and that the Washington office had assumed some functions, including the employment of architects, hitherto held by the local authorities. This was because the earlier interpretations of the defense legislation left some doubts whether the local authorities could act under the letter of the law.

But it has been possible to reverse this policy, which was out of line with the original concept of USHA operations. Thus an architect can now deal directly with the local authority in his area, as before.

Fabrication on site

Large-scale projects under PBA have made it possible to test out a new construction method which promises to out-fab prefab. The idea is to set up a fabrication plant on the site and turn out standardized units in quantity so that the mass production is in the project itself rather than at some distant factory.

The contractor on the 3,000-unit San Diego project, despite a long period of heavy rain, is turning out 15 houses per day under this plan and expects to step up to 40 per day. Regular prefabricated construction thus far has turned out to be a good deal slower—three a day on one job now being worked. Some of the prefab contractors have indicated that if they get large projects they will build plants on the site rather than operate through their factories.

Present policy on prefab is to award to a general contractor who does the streets and utilities and subcontracts for the buildings. The prefab subcontractor is responsible for utilities within 8 ft. of the house walls and can hire the general contractor or someone else to help in utilities and foundation work. Contracts for 220 prefabricated houses have been let at Indian Head, Md., one of the pioneer projects in this field.

Total defense housing contracts of PBA total about 26,000 to cost $80,000,000. Some 10% are occupied. This is about half the total of 51,500 authorized. Contracts are being let at an accelerating rate. PBA has set up a definite construction schedule and is pressing its contractors to proceed according to plan.

Rents and resales

Policies as to rents and resale of defense housing are important in their relation to the real estate market in areas affected. Co-ordinator *Palmer* has given assurance that the homes will not be dumped on the market at the end of the program but will be fitted into permanent community needs insofar as possible or will be demountable in areas where the need is temporary. Similarly in the purchase of 2,035 trailers for stopgap housing in seven crowded areas, the Federal Security Agency gave assurances to manufacturers against resale which would break the market.

Rentals are being worked out on a sliding scale according to the earning power of the tenants. Meanwhile the Consumer Division of the Defense Commission has prepared suggestions for fair rent legislation to prevent profiteering in defense areas where housing is in demand. This Division has appointed *Joseph P. Tufts* as chief of its Housing Section.

That defense housing projects contain no frills was vehemently demanded in the House debate on the Lanham bill. Congressmen complained that high-wage defense workers are getting electric stoves and refrigerators while dollar-a-day draftees are living in tents. A restriction against the furnishing of movable equipment was inserted in the measure.

Priorities, not yet

Although military priorities have begun to restrict the regular commercial use of a few metals and materials, notably aluminum, the construction industry as yet is affected in no significant way. The situation remains as we reported it two months ago. (AR 2/41, p. 16.)

With a new wave of defense activity piling up on top of the orders now going into production, due to the $7,000,000,000 lend-lease bill and several billions more for Army and Navy orders, shortages increasingly will overhang all industries. But the predictable effects upon construction probably will be along fairly narrow lines and may not be felt for some months yet.

Plumbing supplies are more in the path of the steam roller than any other construction item because they depend upon metals and machinery. There is, however, no apparent problem in steel. There is hope that the copper situation can be kept in hand. Zinc, in which there is a present

(Continued on page 112)

THE RECORD POLL IN MIAMI

Photo from Sickles

ELEVEN NOMINATIONS: Du Pont Building, Miami, designed by the architectural firm of Marsh & Saxelbye

Photo by St. Thomas

TEN NOMINATIONS: Albion Hotel, Miami Beach, of which Igor B. Polevitzky and T. Trip Russell were the Architects. (See AR 3/40, pp. 44-48)

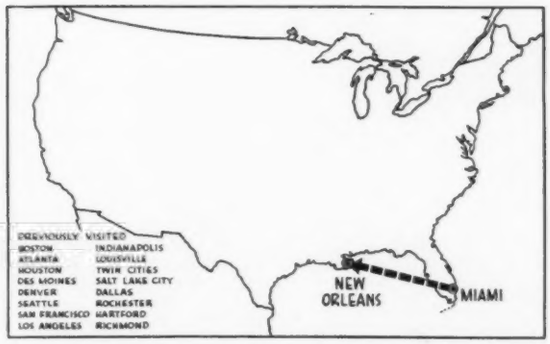
MODERN DESIGN IS PRE-EMINENT

MIAMI AND MIAMI BEACH differ, perhaps, from any of the cities which have been reported on in this RECORD Poll of urban architecture. For these cities are young, without the traditions that grow from the deep soil of architectural history. So it is natural that Miami architects should frankly and unhesitatingly put to use the new concepts of design. Of seven buildings which citizens of Miami and Miami Beach nominated as the outstanding structures erected in recent years, only two borrow traditional styles—the U. S. Post Office in Miami, with its classic facade, and the *Julio Sanchez* residence, giving a foretaste of the Creole influence we will look for in New Orleans.

Miami and Miami Beach residents who submitted nominations were: *Edward F. P. Brigham*, lawyer; *C. W. Butler*, FHA official; *Jack Farrey*, building inspector; *Herbert U. Feibelman*, lawyer; *Edmund Friedman*, engineer; *J. A. Guyton*, business executive; *John W. Holland*, Judge, U. S. District Court; *James V. Johnson*, clergyman; *George E. Merrick*, postmaster; *T. V. Moore*, business executive; *Father Riley*, priest; *J. Clinton Shepherd*, artist; *V. W. Sills*, building engineer; *J. J. Sinnes*, insurance broker; *William Sydow*, Director of Public Service; *Cathings Therrel*, lawyer; *John G. Thompson*, lawyer;

Also: *Ralph Cleveland, R. W. Commins, David Ellis, Dr. Herman Glicksburg, William A. Herin, Dr. Walter C. Jones, H. Milton Link, William W. Muir, Ralph Pole, Mrs. Robert Morris Seymour, Harry Sirkin, George Smathers, Dr. Arthur Walters, Henry Williams, J. E. Yonge and Dr. Corren Youmans.*

(Continued on page 22)



NEW ORLEANS is next

THE RECORD POLL IN MIAMI

Photo by St. Thomas

NINE NOMINATIONS: Dade Boulevard Firehouse, Miami Beach. It was designed by Robert Law Weed and Edwin T. Reeder. (See AR 4/40, pp. 44-48; 2/41, p. 66)

Photo from Sickles

EIGHT NOMINATIONS: Lincoln-Washington Building, also known as the building of the Mercantile Bank and Trust Company, Miami Beach. Designed by Albert Anis; Weed and Reeder Associate Architects

Photo from Sickles

FIVE NOMINATIONS: United States Post Office, Miami. Paist and Steward, Architects

(Continued from page 21)

Buildings, in addition to the ones shown, which were nominated by several individuals included: Shelburne Hotel, Igor B. Polevitzky and T. Trip Russell, Architects; Versailles Hotel, Roy F. France, Inc., Architects; Whitman Hotel, Roy F. France, Inc., Architects; Craig Forbes residence, George A. Coffin, Architect; Miami Shores Country Club, Robert Law Weed, Architect; Herschel Auxiere residence, Alexander Lewis, Architect; Barry College, Gerald A. Barry, Architect; and Lord Tarleton Hotel, V. H. Nellenbogen, Architect.

Photo by St. Thomas

FIVE NOMINATIONS: Burdine's, Inc., Miami. Architects, E. L. Robertson and John R. Weber. (See AR 5/39, pp. 36-39)

Photo from Sickles

FOUR NOMINATIONS: Residence of Julio Sanchez, designed by Edwin T. Reeder

An Architect discusses

OIL BURNING SYSTEMS

Roy D. Bassette is a member of the firm of Smith and Bassette, of Hartford, Connecticut, designers of many of the finer buildings in New England, among them the new Town Hall in Clinton, Connecticut, and the State Office Building in Hartford. Concerning oil burning systems, Mr. Bassette expresses these opinions:

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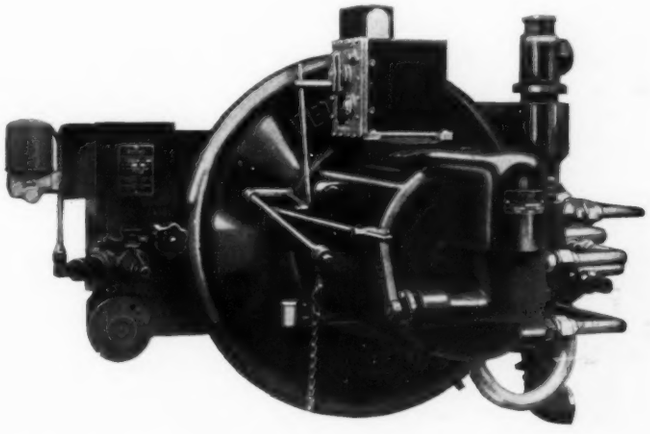

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REVIEWS OF CURRENT LITERATURE

Compiled by ELISABETH COIT, AIA

Space, Time and Architecture: The Growth of a New Tradition. By Sigfried Giedion. Cambridge, Harvard University Press, 1941. xvi, 601 pp., 6¾ by 10 in. Illustrated. $5.00

SPACE, TIME AND ARCHITECTURE is a development of a recent series of the Charles Eliot Norton lectures at Harvard.

Professor Giedion of Zurich, a pupil of Heinrich Wölfflin, himself a pupil and the successor of Jakob Burckhardt at Basle University, carries on the Swiss historical tradition started by Ruskin's contemporary, Burckhardt, who first showed how a period should be treated in its entirety, with regard "not only for its painting, sculpture and architecture, but for the social institutions of its daily life as well."

In close touch throughout his life, first with the elder, and later with the younger architects from Stockholm to Athens interested in determining what directions architecture and town and regional planning were taking, the author combines the objectivity he learned from Wölfflin with an understanding of his own time, acquired through those personal contacts, to form the perfect historian, who presents sources and records rather than his own opinions, but lights up that presentation with personal sympathy with, even enjoyment of, the successive problems of successive generations.

A short section embracing the time from the beginning of Baroque introduces the main theme: architecture, construction and city planning of the past three score years and ten. These are discussed with the consciousness of the desire for universality, timelessness and continuity both in the readers and in the artists, driven sometimes by that need into the backwaters of imitation, but oftener speeding on the stream of their generation's problem and experience and reflecting that in their work.

About a sixth of the book deals with "American Development," though America appears in many other connections. Rarely has our life been so vividly presented.

Housing and Regional Planning. Written and illustrated by Herman Kobbé. New York, E. P. Dutton, 1941. 233 pp., 6¼ by 9¼ in. Illustrated. $3.00

WRITING seemingly partly as an architect ready to enter a competition for the replanning of the entire Greater New York area, and partly as the mouthpiece of the Planning Authority created to carry out this (presumably winning) solution, the author gives most of the answers to questions on the remaking of a complicated area of some 6,000 square miles to house ultimately about 30,000,000 souls.

In pleasantly flowing prose graphically illustrated, chiefly by his own drawings, Mr. Kobbé, "an architect . . . who has devoted a lifetime's study to the subject," outlines the needed legislation, suggests a regional layout and transportation scheme, designs houses and gardens, urban and rural parks, community centers, seaside and mountain housing — not alone for health and pleasure but also to help correct the city landlord's exaggerated ideas on rent, demonstrates the Authority's responsibility for its high-cost as well as its "social-service" housing, and suggests costs.

The reader, eager to test ideas differing from much current usage, will regret that statement of fact and of "erroneous beliefs," of ideas, hopes and wishes are, for the most part, presented without distinction, and that for want of acknowledgment and references he is obliged to check all statements. Only by serious perseverance does he reach the concluding economic program.

A Citizen's Guide to Public Housing. By Catherine Bauer. Poughkeepsie, Vassar College, 1940. 90 pp., 5½ by 7¾ in. Illustrated. $0.60

Housing Study Course. New York, Welfare Council, 1940. 31 pp., 8½ by 11 in., map. $0.50

THE CITIZEN'S GUIDE is a brief, keen statement of the present status of public housing, its cause, and even a suggestion or two on its cure, by a consultant to the USHA and author of one of the first books of the housing septennium just closing. One of the Vassar College 75th anniversary publications only recently released, this informing "pamphlet," as the author calls it, stops at the threshold of the present defense program. One looks forward to finding, a lustrum or so hence, photographic and other footnotes to some of the matters adumbrated here. Meanwhile it is to be hoped that this clear, informing little work will soon go into a second edition with stiff covers and a greatly extended list "for further reading."

The Housing Study Course covers in seven lessons a wide enough field. There are useful lists of readings and general bibliography.

Defense Housing Digest: A Summary of Laws, Regulations, and Results. Chicago, National Association of Housing Officials, 1940. Looseleaf, v.p., 6½ by 9½ in. $1.00, including supplements as issued

IN CONVENIENT FORM for keeping up-to-date as additional Digests are supplied, the Defense Housing Digest gives the text of all measures concerning defense housing, except those covering barracks and cantonments, with the addition of popular titles, marginal sectional headings and subheadings, and the underlining of the most basic parts of the text. Also included are progress reports of construction, both from the office of the Defense Housing Coordinator and from the Federal Works Agency.

Purbeck Shop: A Stoneworker's Story of Stone. By Eric Benfield. New York, Macmillan, 1941. xv, 172 pp., 5½ by 8½ in. Illustrated. $2.75

PURBECK, a promontory of some 16 square miles near the Portland of Portland stone fame, has been a source of English marble, paving and building stone since the 17th Century. The description of the craft and its masters by a former quarryman,

(*Continued on page 30*)

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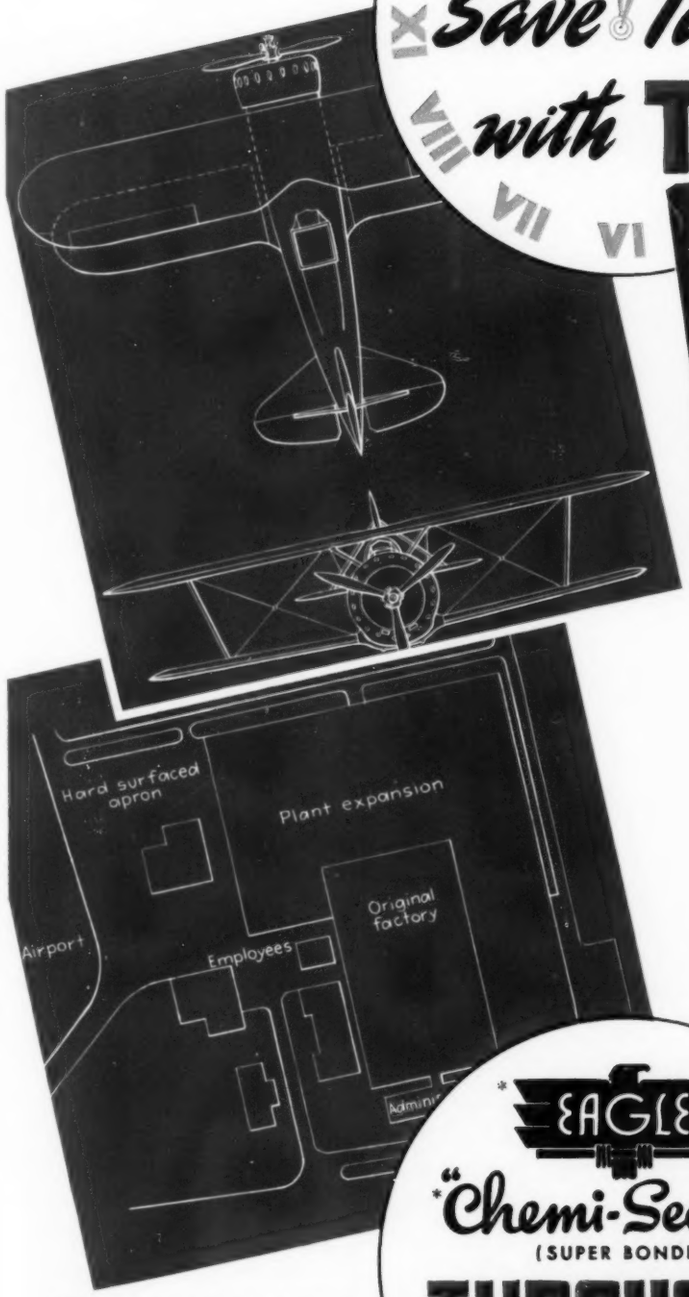

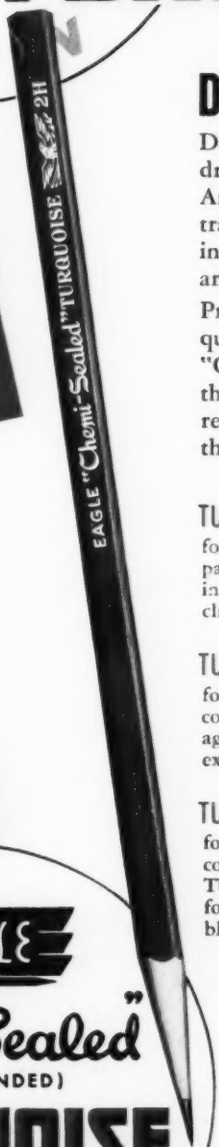

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REVIEWS OF CURRENT LITERATURE

(Continued from page 28)

now a sculptor, is good reading for architects, partly because of its technical information about a material used in outstanding architectural monuments, partly for its style, only to be described as at once pungent and racy.

CURRENT PERIODICAL LITERATURE

Planning Against Noise: A Summary of Acoustics. By Hope Bagenal. Journal of the R.I.B.A., London, Jan. 13, 1941, pp. 39-44. Illustrated

THE SUMMARY, begun in this number and to be completed in that for March, is given in this form for the use of students, architects and others concerned whose access to text books and treatises is interrupted by war conditions. It is not, however, merely a réchauffé of material previously published, but contains much hitherto unpublished material from Mr. Bagenal's own studies.

In compact form is outlined planning for quiet related to sites, pipe shafts, interior room arrangements, and air conditioning in houses, apartments, hospitals, hotels, schools, business buildings, huts, camps and other community buildings.

For the American reader with access to text and reference work, the chief interest will probably be in what Mr. Bagenal calls the "socio-acoustics of working-class flats" and row houses, and of one room apartments for students and others needing quiet in inexpensive quarters.

Fluorescent Lighting in the Home. By Myrtle Fahsbender and Richard G. Slauer. Architect and Engineer, San Francisco, Jan. 1941, pp. 43-4. Illustrated

A DISCUSSION of the possibilities of fluorescent lighting for home use. Here are presented the question of distortion in the color-band caused by the phosphor as it affects adversely food and decorative schemes, the inconvenience of the delay in starting the light and the mild hum of the transformer. The points are so clear that it ought to be easy to decide where in domestic lighting it would be advantageous to install a system using little current for a brilliant light and generating negligible heat. No consideration is given to the possibility of a combination of fluorescent lamps with those having a filament and capable of restoring much of the red ray lost in fluorescent lighting.

Well Water Cooling for an Unusual Residence. By W. A. Murdoch. Heating and Ventilating, New York, Feb. 1941, pp. 45-46. Illustrated

THIS ARTICLE describes briefly four years' experience in cooling a large residence not far from Chicago entirely by water from a well on the property, with a swimming pool fed by the water after its use in cooling.

The well driven in limestone gave

(Continued on page 32)

Speed Air Change
IN RECREATIONAL BUILDINGS

★ (Below) Five 42" Ilg Power Roof Ventilators on roof of Memorial Hall, Independence, Mo.

★ (Right) Interior view of auditorium

FOR COMFORT OF BOTH
Spectators AND Players

DRIVE OUT

★ "SECOND-HAND" AIR
★ HAZY TOBACCO SMOKE
★ BODY ODORS
★ EXCESSIVE HEAT
★ UNCOMFORTABLE HUMIDITY

Continuous, rapid air change is *critically needed* where athletes perspire . . . where crowds congregate . . . in all types of recreational structures! Here, in Memorial Hall at Independence, Missouri, refreshing outdoor air is drawn in through normal building openings, pulled up through ceiling grilles, then exhausted by ILG Power Roof Ventilators. In a room of 270,000 ft. cubic content, air is changed every 3 minutes. For complete data on ILG Ventilating Systems, for "Proof of Result" reports on handling recreational structures, see our catalog in SWEET'S . . . phone our nearest branch office . . . or write today!

Yours for the asking — Contains pictures and reports of 26 successful ILG solutions of ventilation problems. Ask for "Sensible Ventilation".

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2826 N. CRAWFORD AVE., CHICAGO, ILL.
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Vitalized VENTILATION
AND AIR CONDITIONING
★AIR CHANGE...NOT JUST AIR MOVEMENT!

New! Floor of Nairn Linoleum Tile (Damp-Proof) in a rumpus room. Complete protection against rotting and cracking due to moisture. Remarkably easy to clean—dirt cannot grind into the surface as it may with other materials.

THERE'S A NAIRN PRODUCT FOR EVERY FLOOR-COVERING REQUIREMENT

Specifying floor-covering for kitchens where serviceability is essential? For basement floors where dampness is the problem? For living-rooms, bathrooms, foyers—floor areas that must give your clients attractiveness, plus long life?

You will find a Nairn Linoleum ideally suited to each of these purposes. They incorporate features which make the finished floors of Nairn Linoleum completely satisfactory to the two parties most vitally concerned—your client and yourself.

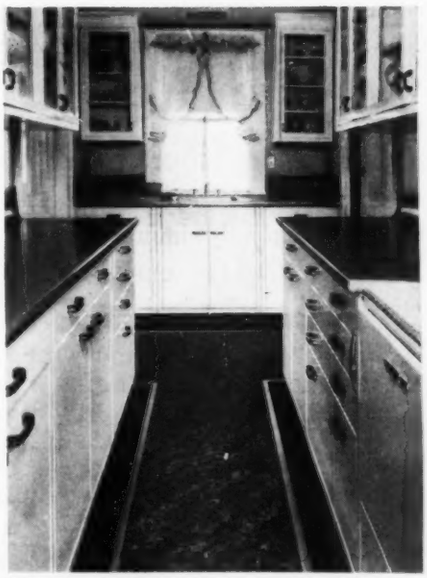
New! Nairn Linoleum Tile (Damp-Proof) for on or below grade installation

The new and revolutionary Nairn Linoleum Tile (Damp-Proof) is the *only* genuine inlaid linoleum that can be used over concrete floors on or below grade, or on floor areas subject to dampness, with assurance of long, trouble-free service. With three sizes and six marbleized colors to choose from, the design possibilities are limitless. Particularly ideal for sun porches and rumpus rooms.

When installed according to manufacturer's specifications, Nairn Linoleum is fully guaranteed.

CONGOLEUM-NAIRN INC. KEARNY, N. J.

NAIRN
LINOLEUM
Floors and Walls



The decorative scheme of this modern kitchen takes its "cue" from a beautiful floor of Nairn Vettone Linoleum. Note one-piece cove base and border treatment, a feature that makes cleaning easier and promotes sanitation by eliminating dirt-collecting cracks

REVIEWS OF CURRENT LITERATURE

(Continued from page 30)

water at 1,000 feet in depth with maximum temperature of 54°F; and an average of 14 gallons a minute sufficed for comfort in a house having an average population of 25, with frequent groups of 30 to 50 for lunch or dinner.

Journal of the American Society of Architectural Historians. Troy, N. Y. (Rensselaer Polytechnic Institute). Jan. 1941. Vol. I, No. 1. 36 pp., mimeographed

THIS FIRST NUMBER, under the editorship of Turpin C. Bannister, Assistant Professor of History of Architecture at Rensselaer, reports the beginning of the Society (originating with a group attending Harvard Summer School in 1940), includes an article by Dr. Herbert Bloch on The Roman Brick Industry and its Relation to Architecture, an 11-page annotated Current Bibliography on Architectural History (Jan.-Oct. 1940) by Ruth V. Cook, and a note on destruction of buildings in Rouen and elsewhere in what is apparently the first of a series: "In Memoriam Monumentorum."

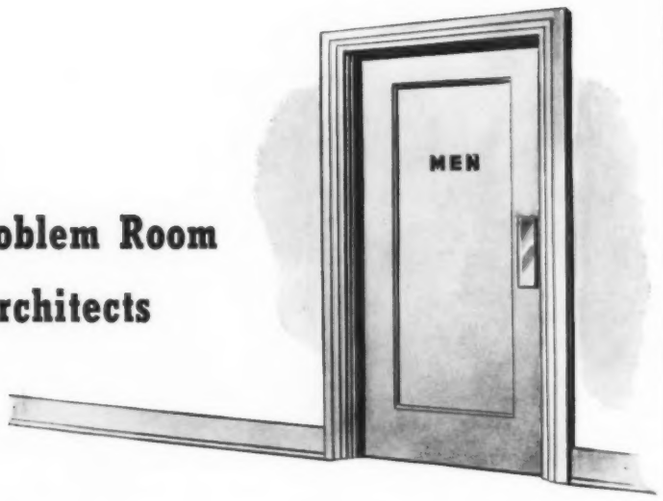
Air Raid Shelter Ventilation. (Taken by permission from a paper by C. Gordon Huntley. Journal of B.I. Heating and Ventilating Engineers, Vol. 8, No. 89.) Heating, Piping, Air Conditioning, Chicago, Mar. 1941, p. 159

BRITISH air raid shelter regulations provide that any shelter accommodating more than 12 persons must be mechanically ventilated, if for every person: (1) the floor area is less than six sq. ft., (2) the cubic capacity is less than 50 cubic ft. Where permanent sealing against gas obtains, the air allowance is 150 cu. ft. per person per hour where the above ratios are not exceeded, or 450 cu. ft. per person per hour if they are.

ARP restrictions prevent the use of normal air movement by exhaust or fresh air inlet fans for shelters as well as for power stations, engine rooms, machine shops, foundries, etc. A satisfactory solution has been found by adopting electrically propelled supply or extract fans combined with a special light shield constructed of baffles similar to that used in normal ventilation work for photographic dark rooms.

Navy Housing in Norfolk. Engineering News-Record, New York, Feb. 27, 1941, pp. 63-4. Plans

TWO LARGE PROJECTS under way to accommodate married enlisted men: one by the Norfolk Housing Authority working with the USHA consisting of 500 units at a cost of $3,900 a unit; the other by the U. S. Bureau of Yards and Docks to house 1,042 families at a cost of $2,284,000 or a little below $2,200 a unit. The latter, consisting mostly of two-story units, on a 48-acre site contains 92 buildings on three longitudinal streets 40 ft. wide; this to permit parking on both sides with two-way traffic. There are no garages, no cellars.



It's a Problem Room for Architects

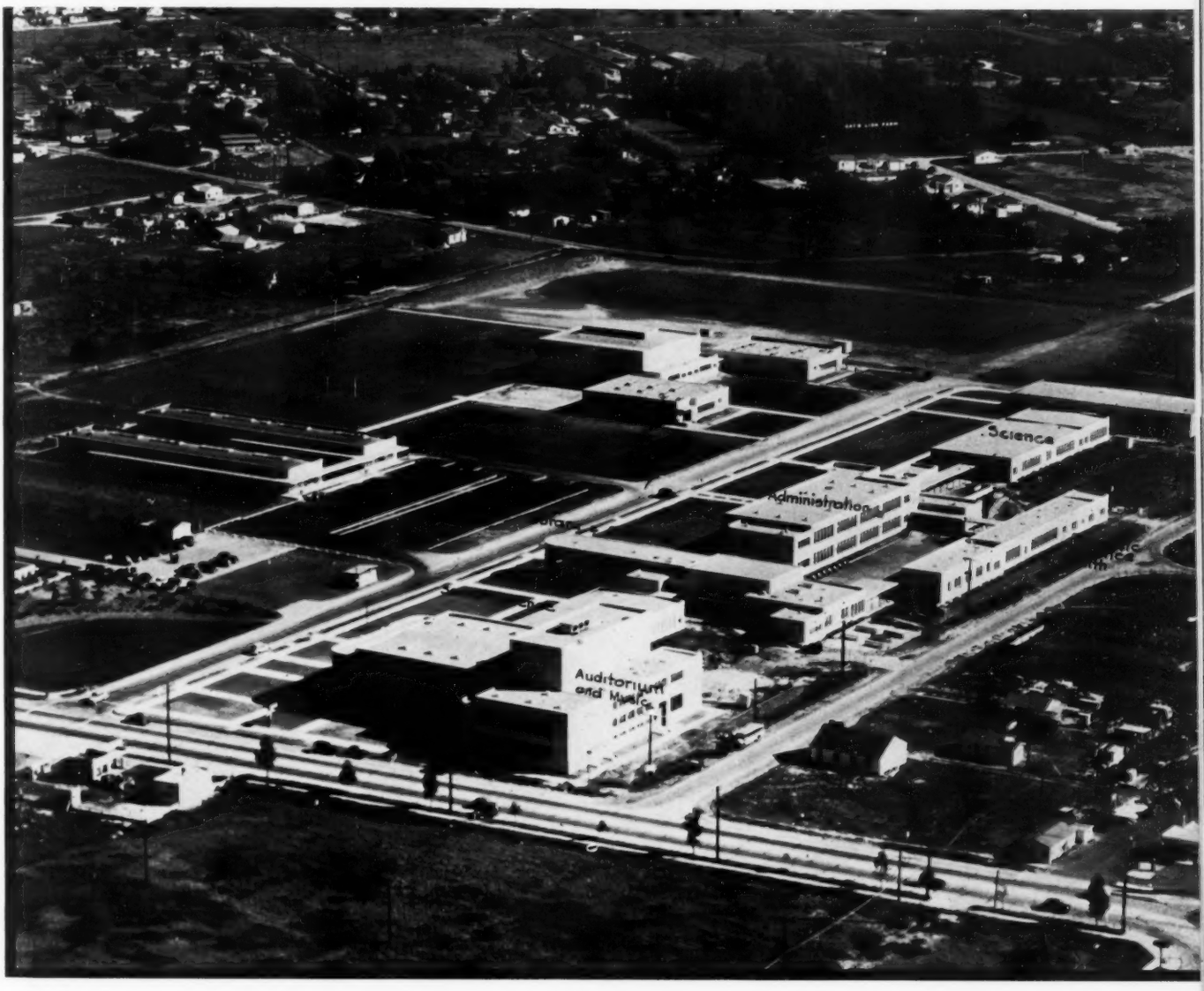
THE toilet partitions in washrooms can be an architectural headache. They have to take a lot of abuse—in schools, offices and factories.

But consider toilet partitions made of ARMCO PAINTGRIP sheets. This greatly improved metal not only has the complete protection of a galvanized coating, but also a smooth bonderized surface that grips and preserves the baked enamel.

PAINTGRIP partitions are light though strong, and you can visualize the saving this means. They are sanitary, easily fumigated, and do not absorb odors. With the galvanized coating under a durable baked enamel finish, PAINTGRIP partitions are much less likely to be affected by mopping and cleaning.

Ask us to put you in prompt touch with manufacturers who use ARMCO PAINTGRIP in their toilet partitions. The American Rolling Mill Co., 1001 Curtis St., Middletown, O.

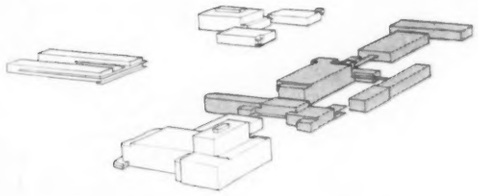
ARMCO PAINTGRIP SHEETS



HIGH SCHOOL, EL MONTE, CALIFORNIA

MARSH, SMITH & POWELL, Architects

DURING THE PERIOD in which this new school plant was being constructed in a rapidly growing suburb of Los Angeles, student enrollment increased more than 25 per cent—from 1,750 to 2,200. Planning for future expansion was, therefore, of paramount importance. The present buildings are so arranged on the site that space is reserved for additional building in almost every department. Two factors determined the choice of the open plan, with departments housed in separate structures: the local soil-bearing value was very low; the buildings had to be designed to resist earthquake stresses. The two larger units—the Administration Building and the Auditorium—are of reinforced concrete construction, erected on piling. The balance of the buildings are one story in height, framed in wood and built up from concrete slabs. Exterior finish is of metal-reinforced cement plaster, applied on diagonal 1-in. sheathing. Built under a PWA program in 1938-1939, the school cost $610,000, including site improvement and professional fees, but excluding equipment and landscaping.

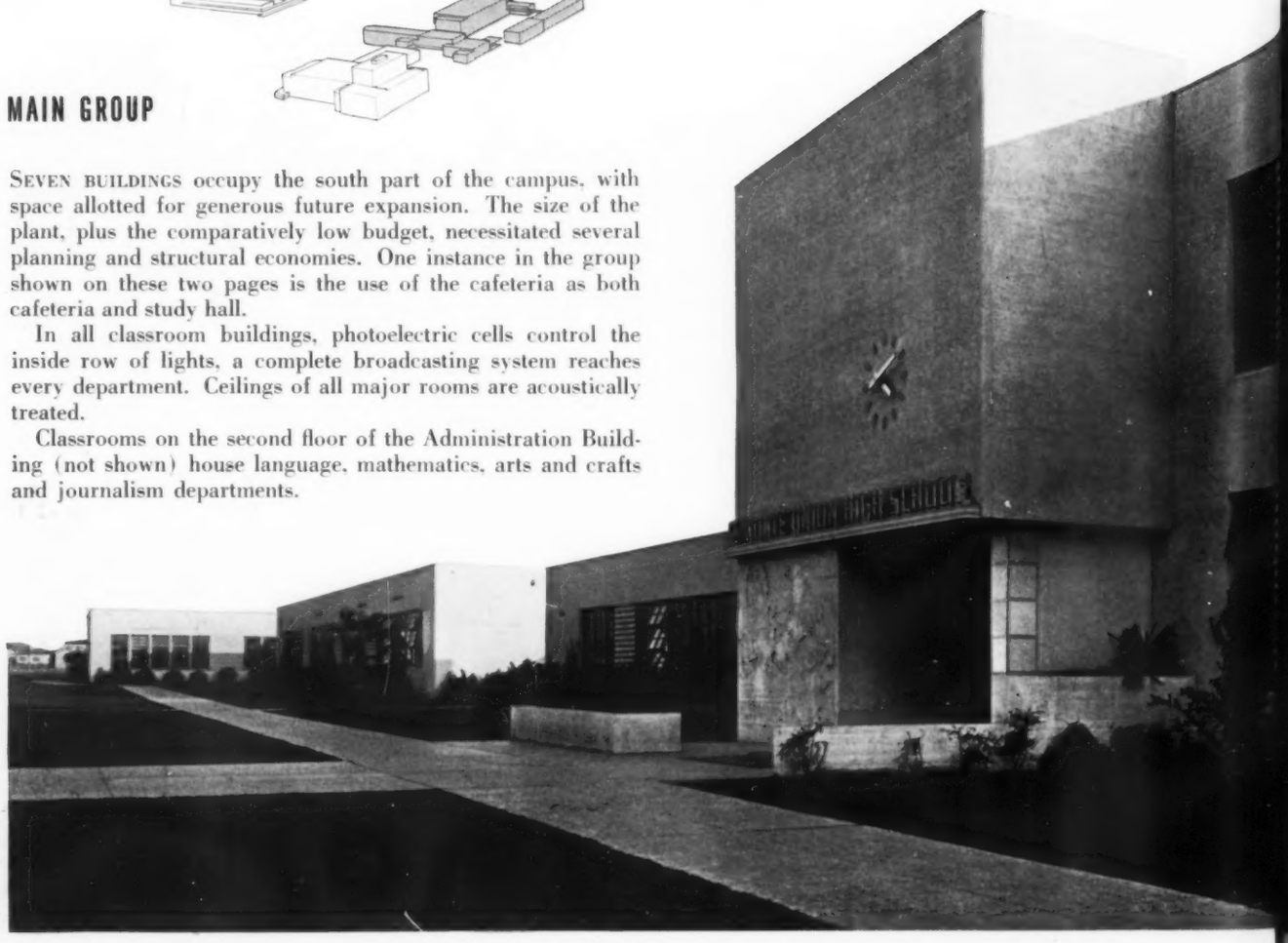


MAIN GROUP

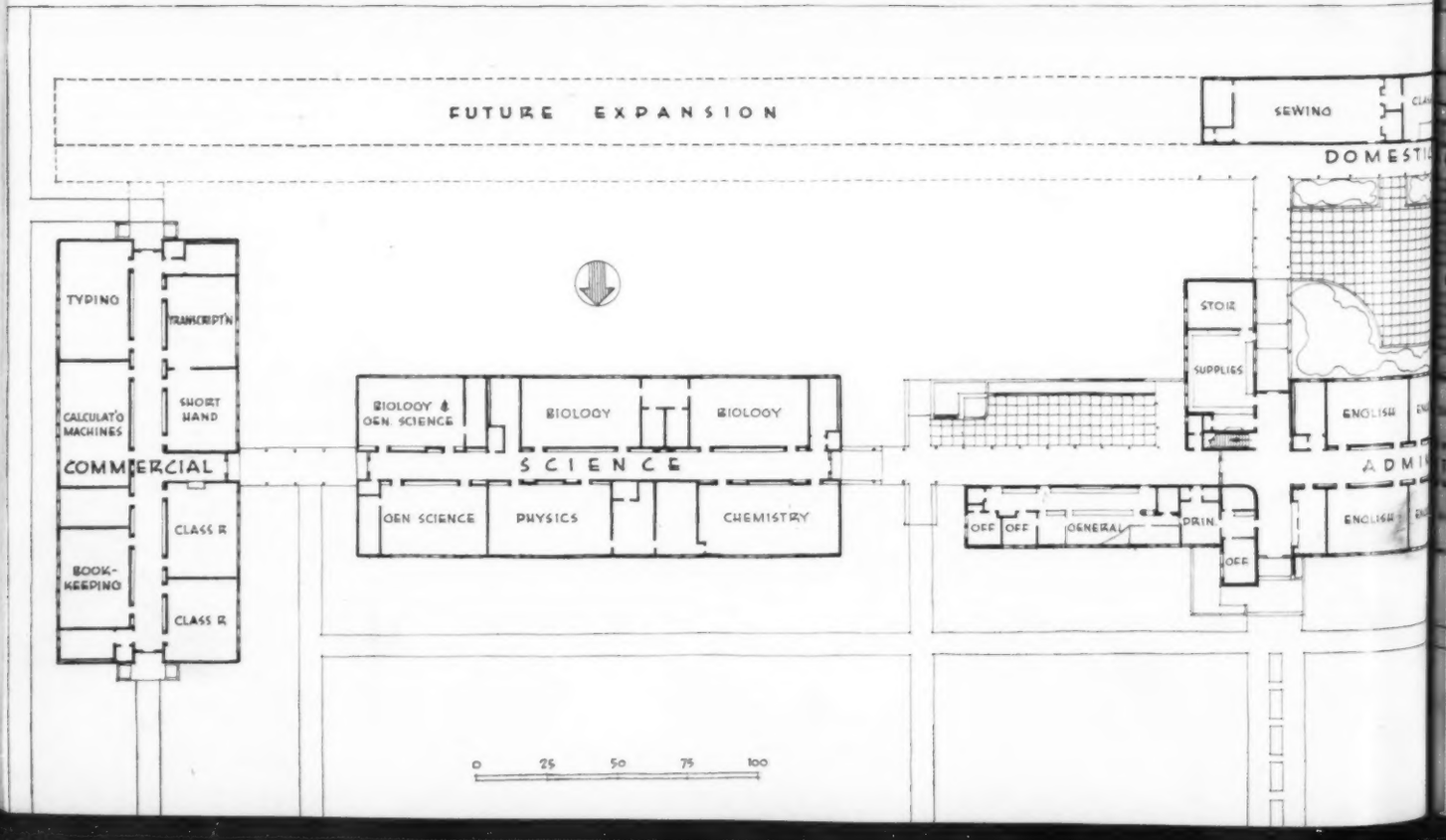
SEVEN BUILDINGS occupy the south part of the campus, with space allotted for generous future expansion. The size of the plant, plus the comparatively low budget, necessitated several planning and structural economies. One instance in the group shown on these two pages is the use of the cafeteria as both cafeteria and study hall.

In all classroom buildings, photoelectric cells control the inside row of lights, a complete broadcasting system reaches every department. Ceilings of all major rooms are acoustically treated.

Classrooms on the second floor of the Administration Building (not shown) house language, mathematics, arts and crafts and journalism departments.

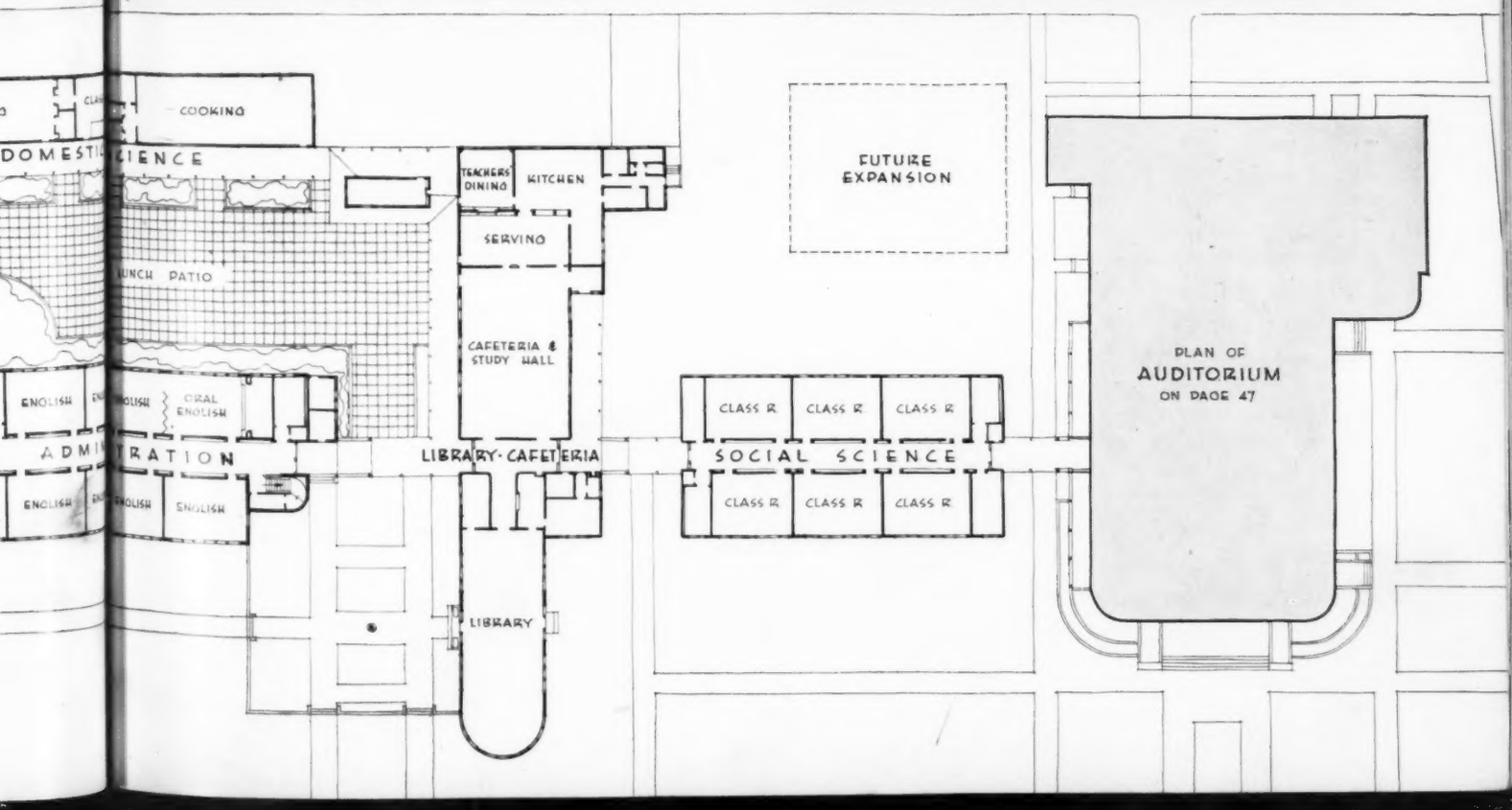


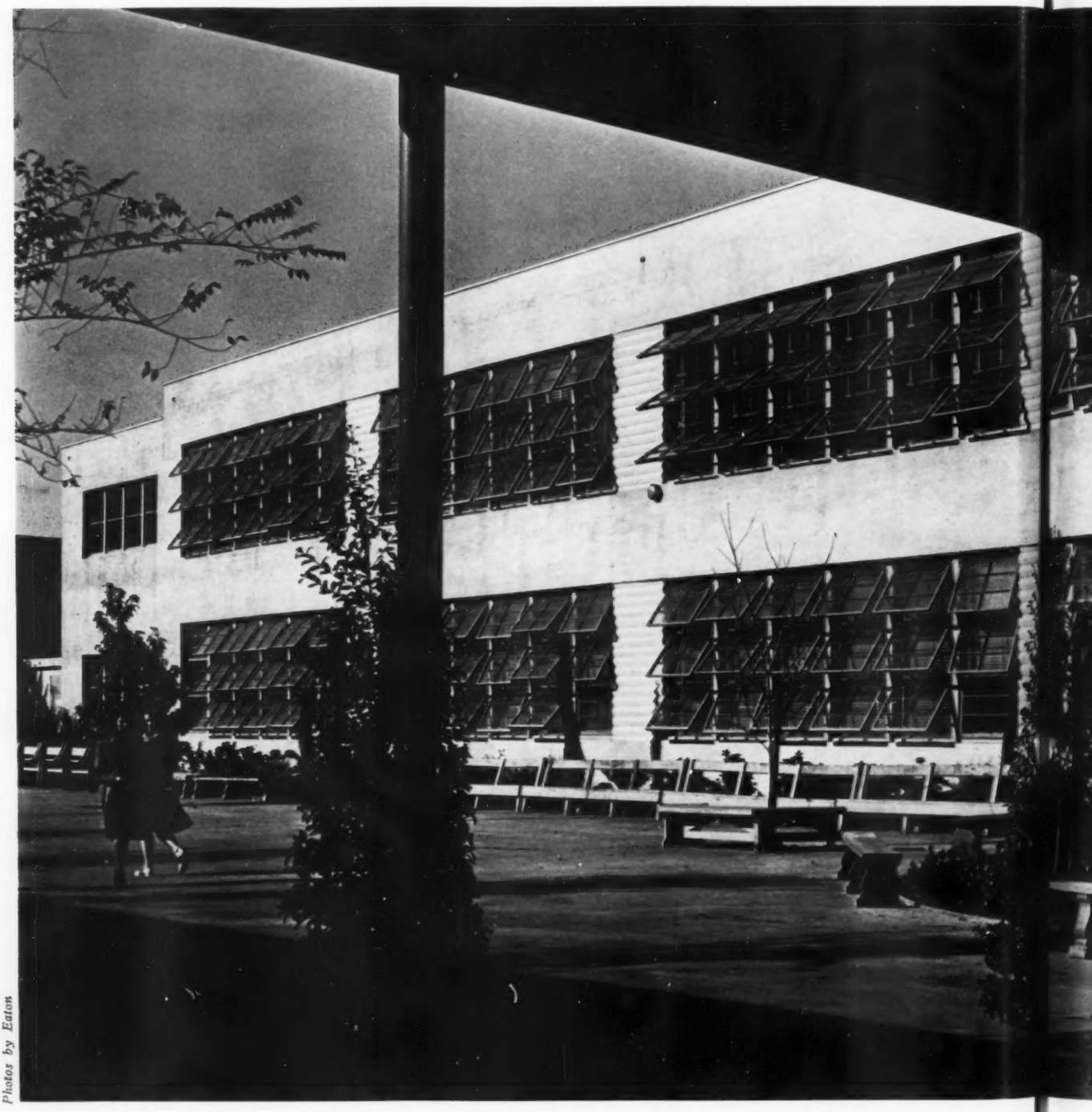
Photos by Eaton



TYPICAL CLASS ROOM

LIBRARY





Photos by Eaton

CIRCULATION

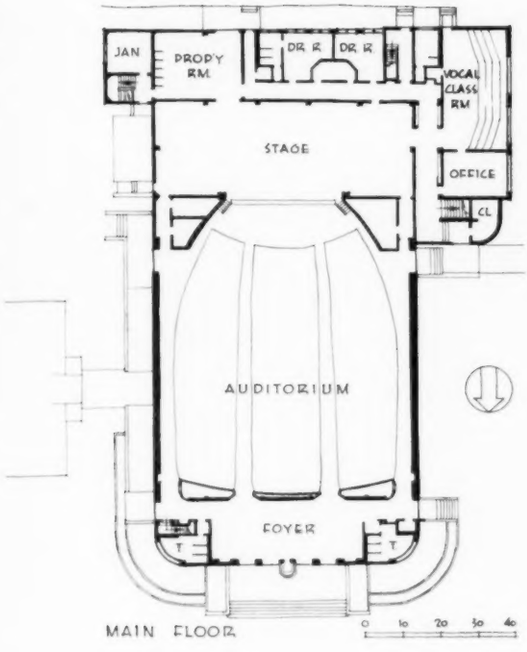
COVERED WALKS connect all seven of the buildings on the south half of the site. In conjunction with adjacent walls, these passageways form various courtyards and patios. The large one in back of the Administration Building (above) adjoins the cafeteria and is used for outdoor lunch-eating. The two units of the Industrial Arts group are also connected with a sheltered walk, which forms an inner courtyard between them.

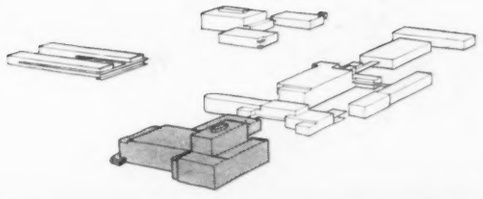
Due to the high water level in this area in winter, no basements were included in any of the buildings. Janitors' work rooms and storage spaces were provided above ground. The heating system consists of a gas furnace and fan system in the auditorium and unit heaters in the main rooms of the other buildings.

ENTRANCE TO AUDITORIUM (See next page)

COLONNADE TO SCIENCE BUILDING

Photos by Eaton

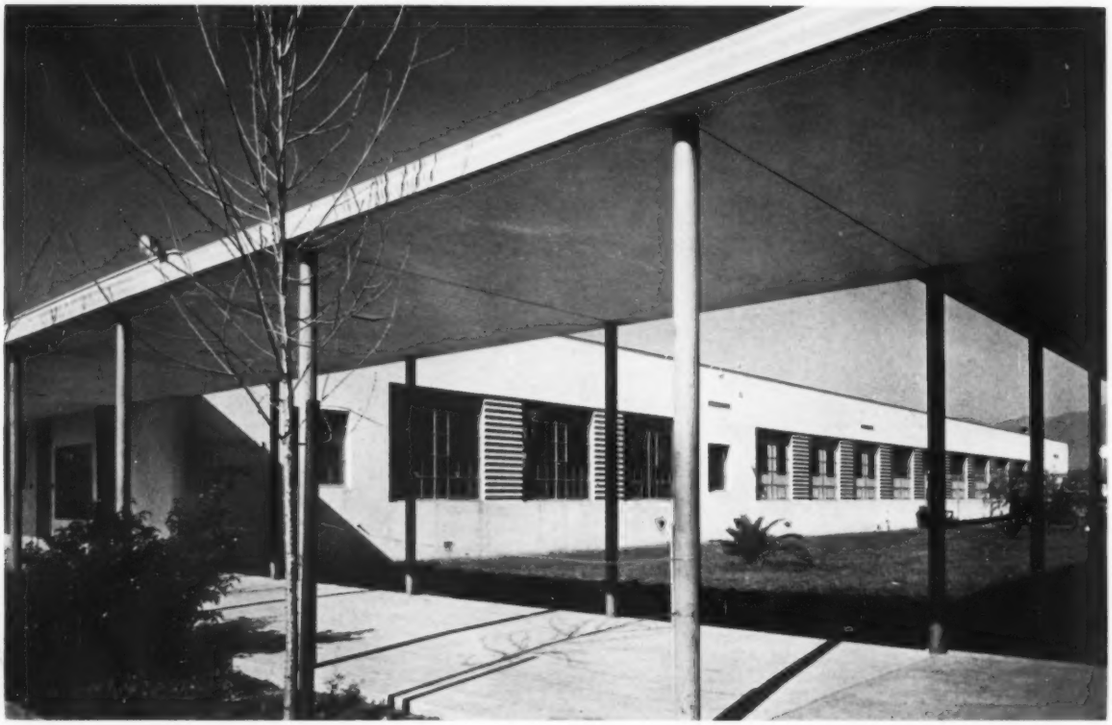




AUDITORIUM

ONE OF THE LARGER BUILDINGS on the campus is the reinforced concrete Auditorium Building. On the ground floor, besides the foyer, auditorium (seating 1,178) and the full-width stage, there are property, dressing and make-up rooms, and classrooms for singing and music appreciation. A specially noteworthy plan feature is the placement of the property room, which opens directly onto the stage and out to a delivery platform at the rear of the building.

An L-shaped plan borders the stage loft throughout three floors of its height. On the second floor there is a large Band Room and store rooms for costumes and instruments. In back of the stage gridiron, at the third-floor level, are a music-teaching studio and eleven practice rooms.



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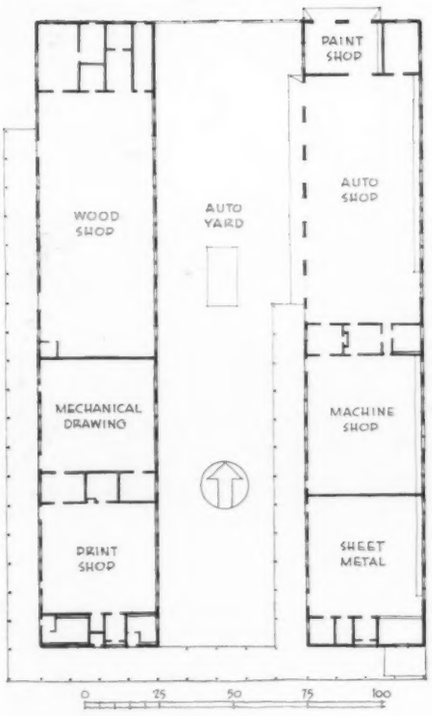
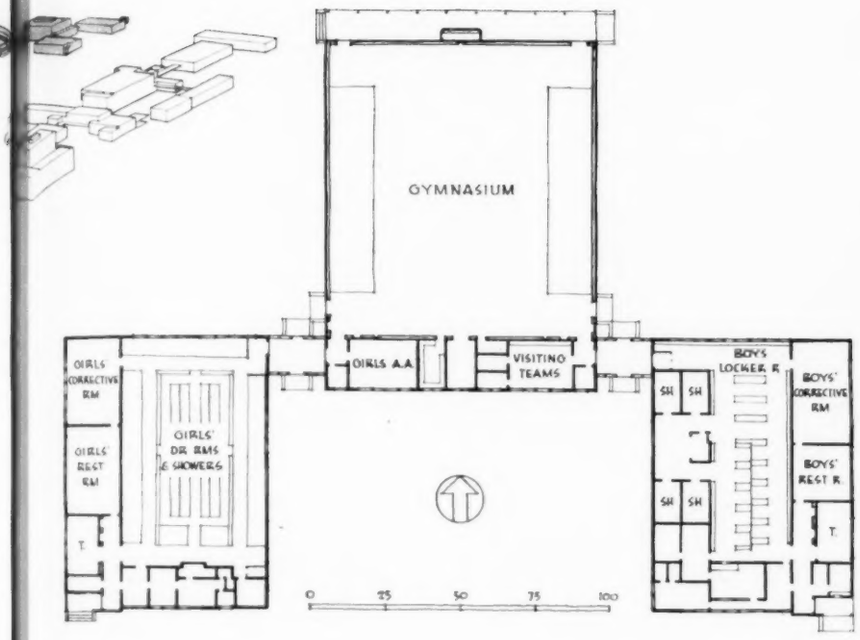


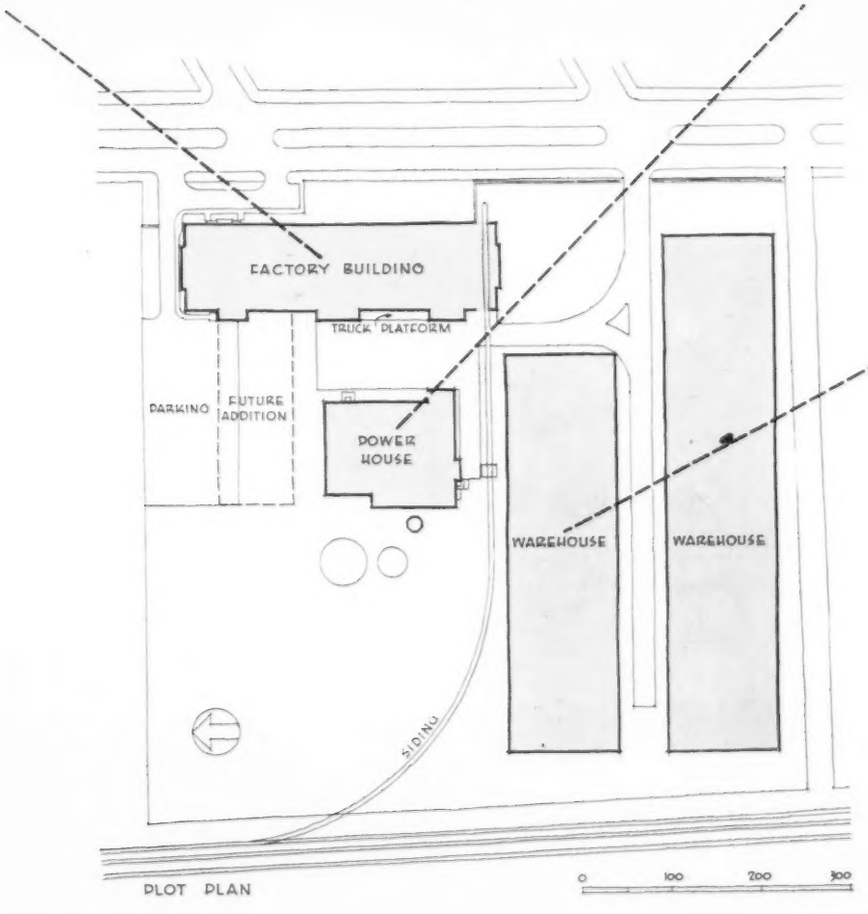
INDUSTRIAL SHOPS

THE TWO BUILDINGS for the school's Industrial Arts Department are located on the north side of the plot directly across from the Administration Building. Special requirements of the educational program dictated the provision of unusually large units. Each is 40 by 428 ft. in area. The buildings are daylighted by both wall windows and skylights. In the east building are auto, machine and sheet metal shops. A print shop, a wood shop and a mechanical drawing room occupy the building on the west. Space on the plot is reserved for proposed future additions—an additional shop building, an Agriculture Building, and a bus garage.



GYMNASIUM

ANOTHER INSTANCE of economical planning to come within the budget is the Gymnasium building, located on the north side of the site. A single large gymnasium floor serves both boys and girls. Locker and shower buildings flank the gymnasium at either side; special dressing-room facilities are provided for visiting teams. Between the gymnasium and the shop buildings (see facing page) is space for six tennis courts. Behind each of the locker-room units is a volley ball court. A track field and baseball diamond occupy the entire eastern end of the school plot.


FACTORY BUILDING
TRUCK PLATFORM
PARKING
FUTURE ADDITION
POWER HOUSE
WAREHOUSE
WAREHOUSE
SIDING
0
100
200
300

PLOT PLAN

Photos by St. Thomas

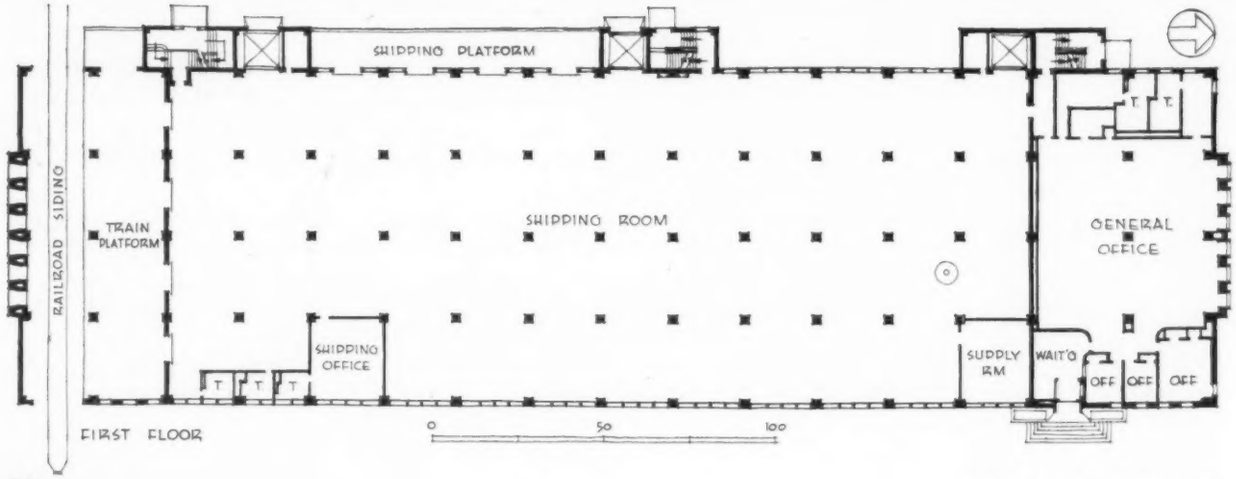
TOBACCO FACTORY, RICHMOND, VIRGINIA

SCHMIDT, GARDEN & ERIKSON, Architects

THIS ENTIRE NEW PLANT for the United States Tobacco Co., just outside Richmond's city limits, replaces the old factory which was in the heart of the city. Two advantages determined the choice of the new and detached site: the buildings could be designed and located for optimum production efficiency; a large enough site was afforded to provide for future expansion of facilities. Location of the site is such that the plant is visible from most parts of Richmond as well as from a considerable distance along the main north-south arterial highway which it adjoins. Hence the group was designed not alone as an efficient factory but also to attract public attention and to advertise the company's product. To the latter end, the entire north and south façades of the factory building proper serve, in effect, as supports for giant, stainless-steel sky signs (detail on page 54).

The plant layout comprises three main elements—the six-story factory building, a power house and the tobacco warehouses. Trucking lanes and a railroad siding reach each of the three units. The basic production process follows a simple pattern. From the warehouses, cured tobacco is taken to the factory building and hoisted to the top floor. Steps in manufacture follow gravity back to the ground floor, where the packaged tobacco is loaded either on freight cars, which actually enter the building at its southern end, or on trucks.

Photos by St. Thomas



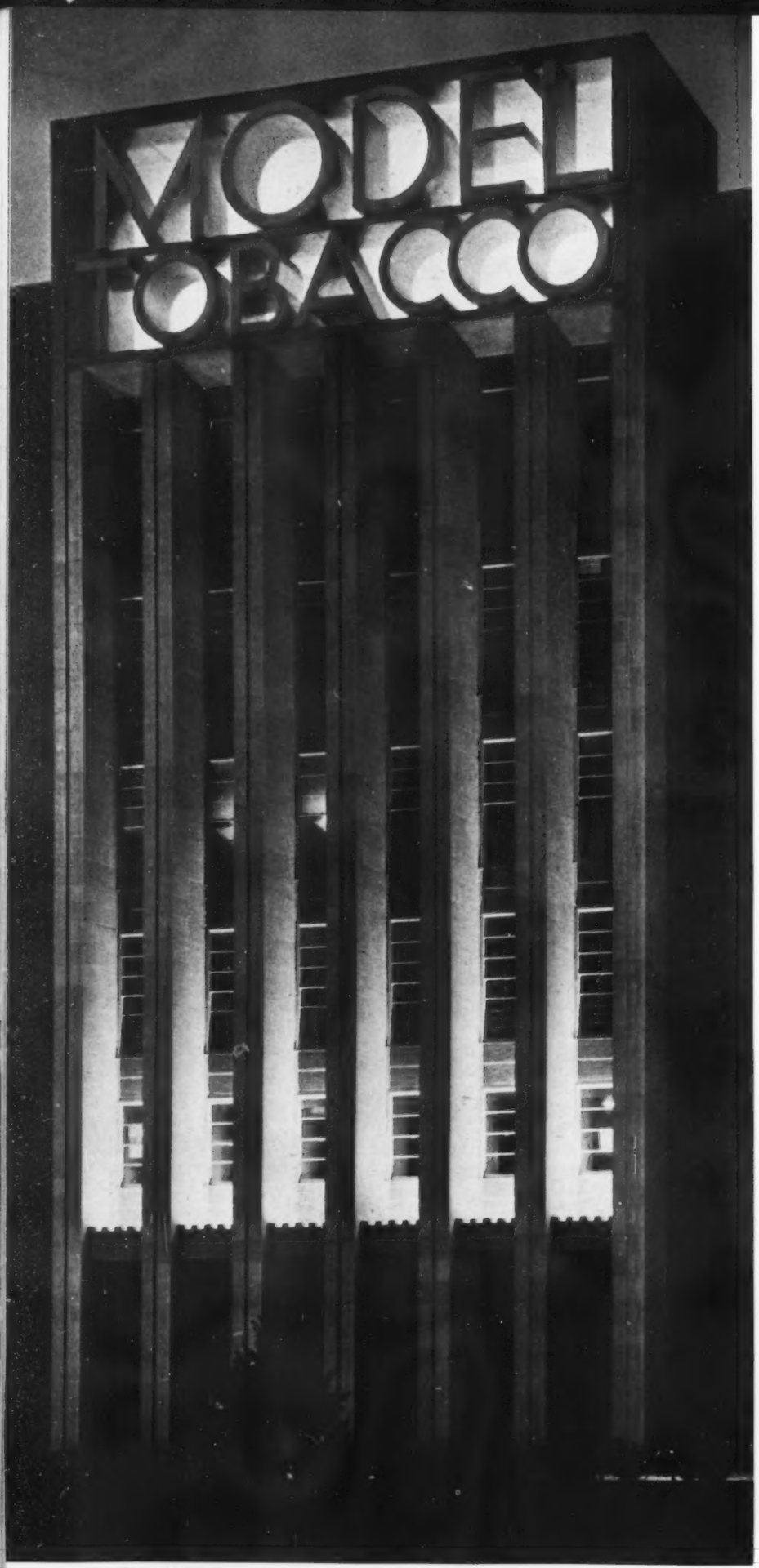
SHIPPING AREA

FACTORY BUILDING

DOMINATING THE GROUP is the main factory building. Of reinforced concrete structural frame, the building is surfaced in red face brick and cut-stone trim. Each of the floor areas (100 by 350 ft.) is divided into three parts—the large central portion given over to the manufacturing process, the two ends variously assigned to railroad siding and office space (see first floor plan), dining-rooms, service, locker and wash-rooms (on other floors). Throughout the six floors fireproof walls with fire doors separate the three areas. The stainless steel signs, which are mounted in cut-stone frames, are supported by vertical piers springing from the ground. On the east long wall of the building are unbroken horizontal bands of windows. Wood sash are used in air-conditioned areas; hollow metal elsewhere. The warehouses are framed in wood and surfaced with sheets of corrugated metal, which are set at an angle to facilitate circulation of air.

CONSTRUCTION SHOT

TRUCKING LANE (warehouse at left)



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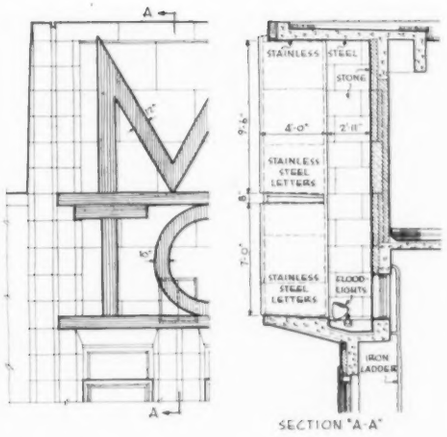
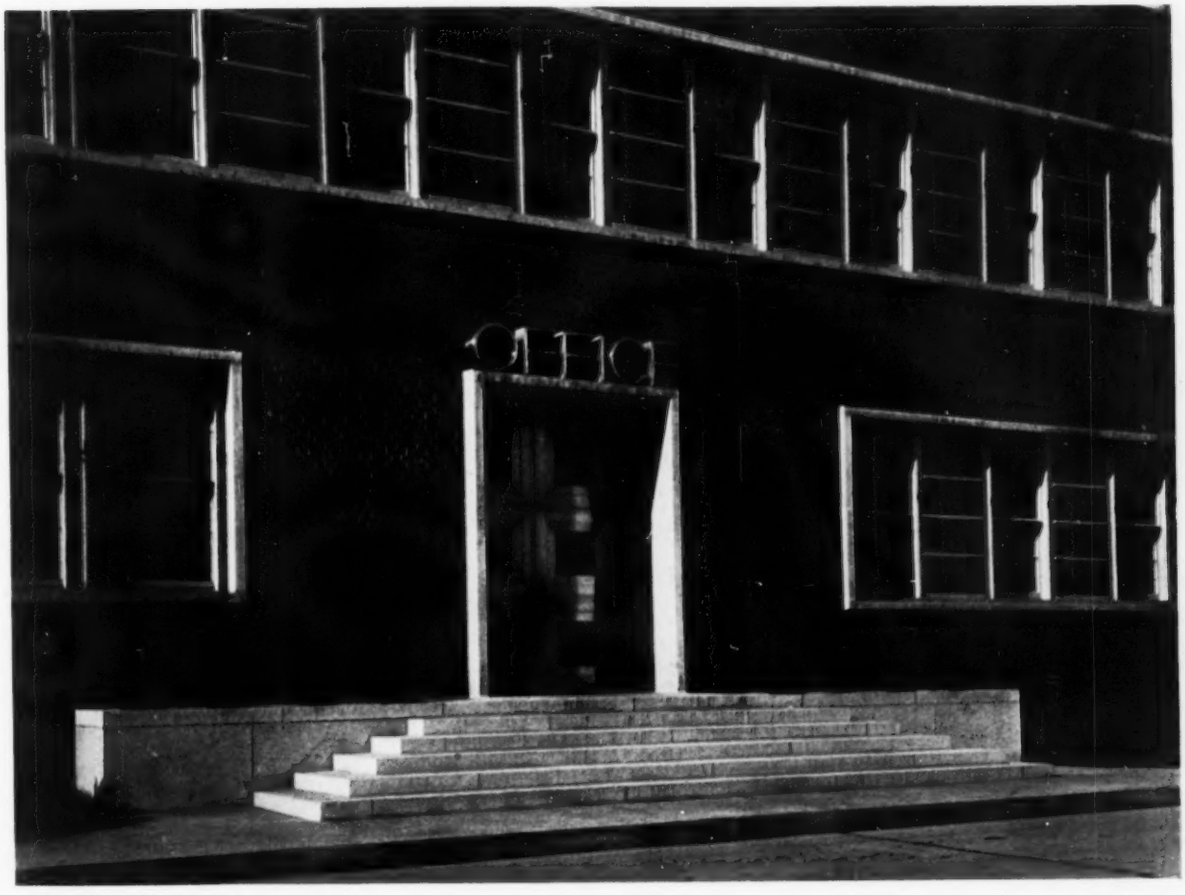


SKY SIGN: The monumental sign letters, of stainless steel, are silhouetted at night against the floodlighted stone background. The area between the piers (see left) is also night-lighted.

PRIVATE OFFICE

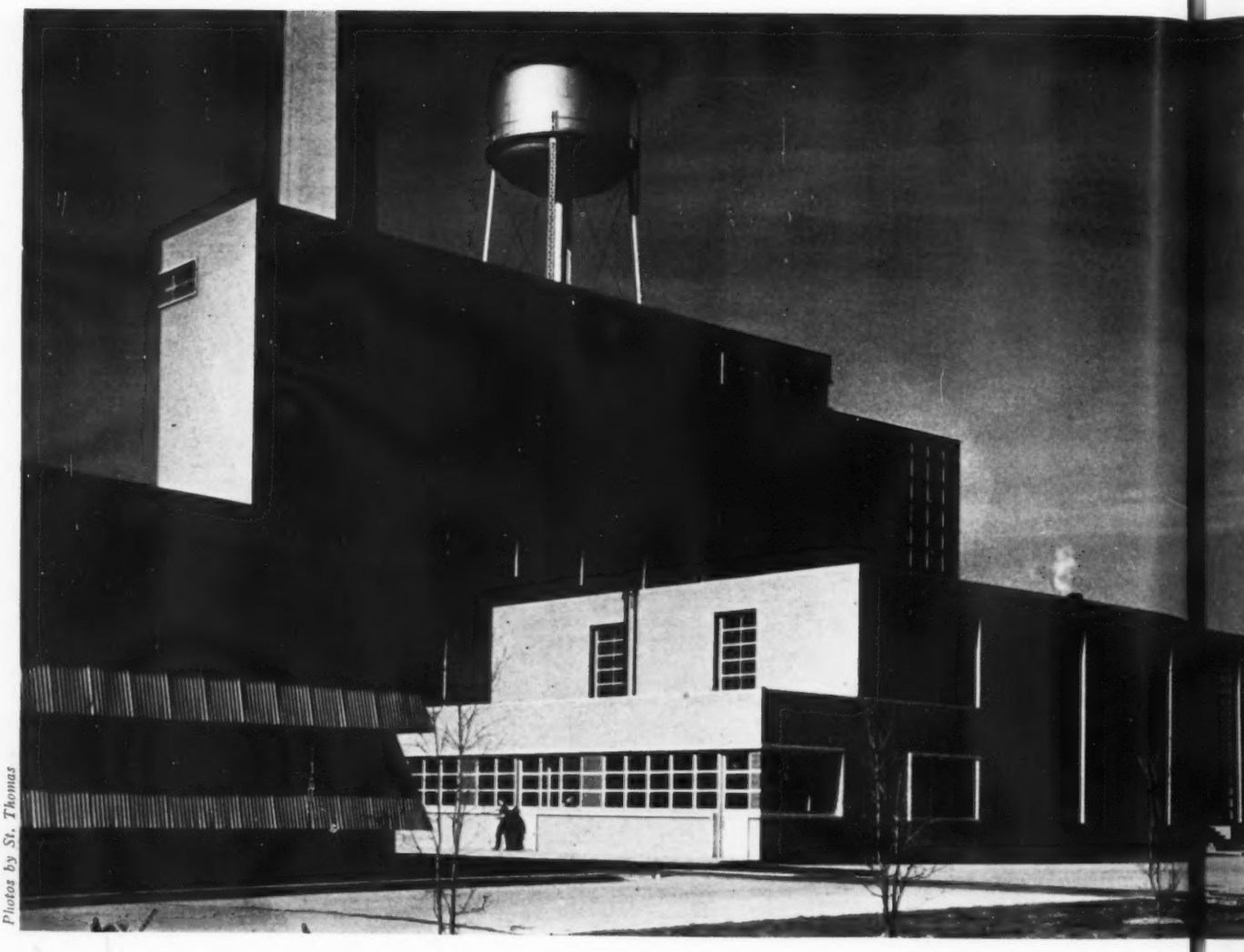


ENTRANCE TO OFFICE AREA

GENERAL OFFICE SPACE

OFFICES

SINCE THE BUILDING is not open to the public, the entrance to the office area, at the north end of the east elevation, is handled simply—a pair of stainless steel doors set in a stone frame. Reception room, private offices and general office work area occupy this entire end of the ground floor. Ceilings are acoustically treated and the floors are of rubber tile. Elsewhere on this floor, asphalt plank floors are used; on the second floor, iron-bound, edge-grain maple. Throughout the rest of the building, the concrete slabs are surfaced with a 1-in.-thick industrial cement finish.



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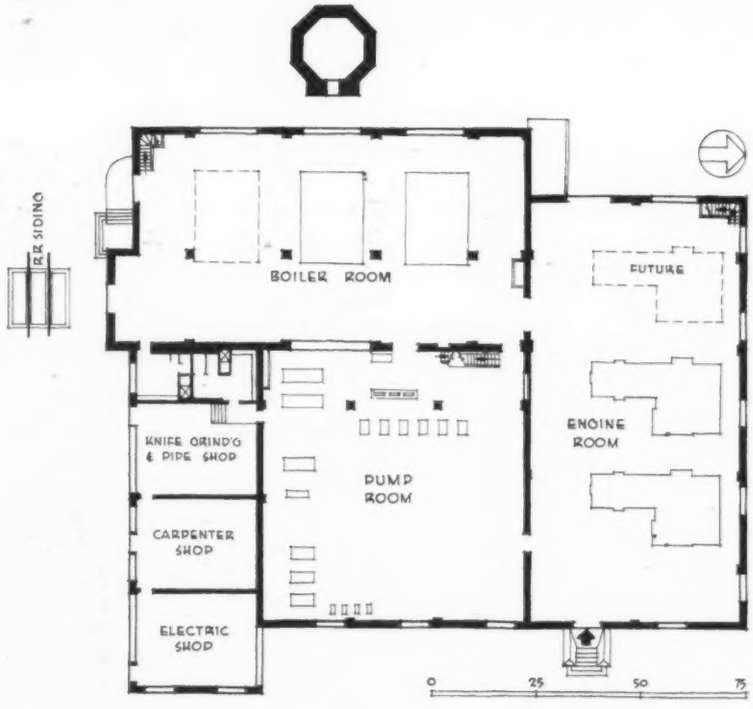
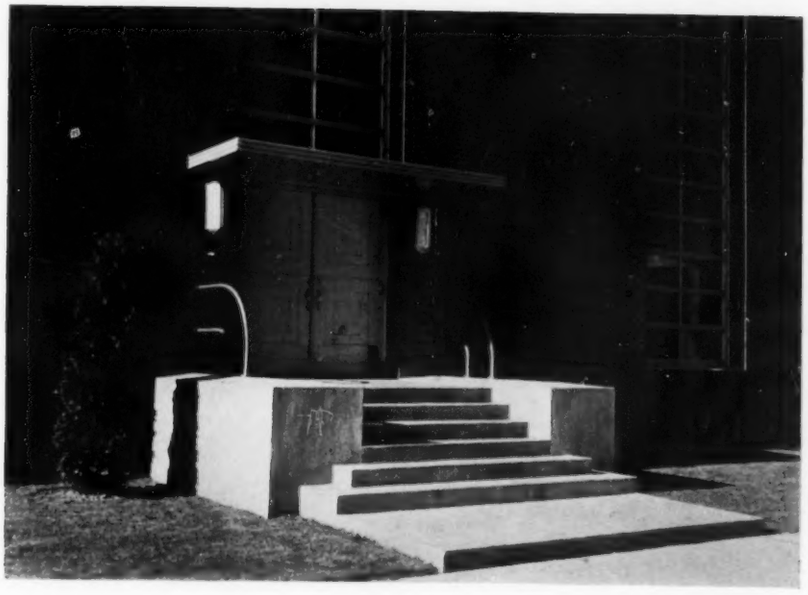


POWER HOUSE

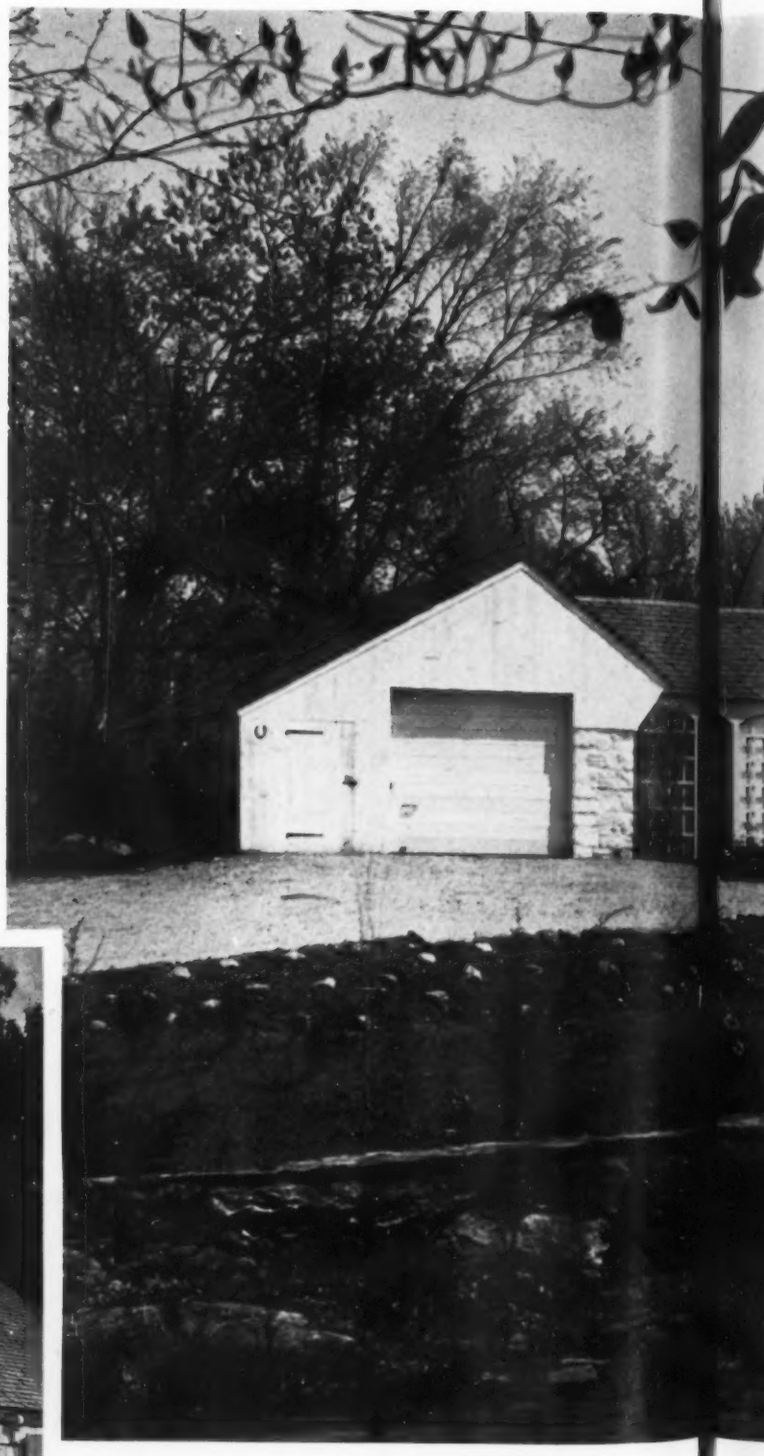
A COMPLETELY SEPARATE UNIT of the plant is the power house with its 204-foot chimney. Surfaced, like the factory building, in brick with stone trim, the power house is framed in steel. A boiler room, pump room, engine room and work shops are the main plan elements. Interior walls are of buff glazed brick. Flooring in the shops is of wood block; elsewhere, of quarry tile. The steel sash are of the projective type with mechanical operators. The power plant consists of two boilers, two engine generators, two refrigerating units, complete with pumps, conveyors and other equipment for automatic operation.

ENGINE ROOM

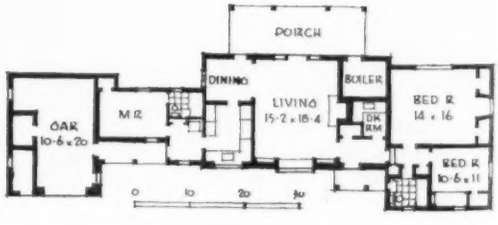


POWER HOUSE ENTRANCE

HOUSES



Photos by John Gass, Rudolph E. Leppert Jr.

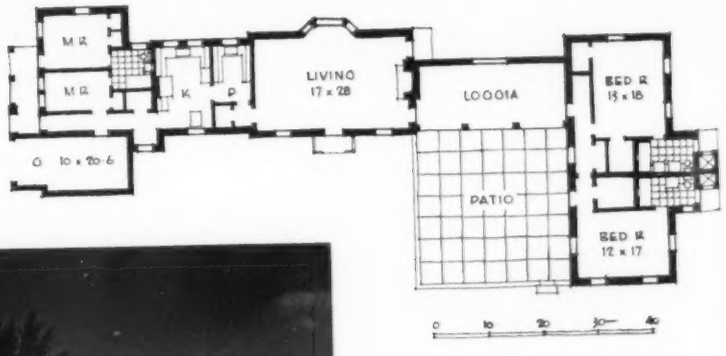


BENSON ESCHENBACH, Architect

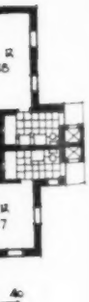
SITUATED NEAR SCARSDALE, N. Y., this residence for Mr. and Mrs. William M. S. Strong is a simple and dignified adaptation of early Pennsylvania domestic architecture. The exterior is a straightforward expression of the plan. With all services (except the boiler room) located at one end, bedrooms at the other, and the living area between, the plan offers a noteworthy solution to the zoning problem. The rear of the house is more open than the front, as the owners wanted quiet and privacy. Exterior walls are of whitewashed stone, hand-split shakes and rough-sawn boards.

Photos by Gottscho

MOTOR COURT and ENTRANCE



REAR ELEVATION
and View toward Sound

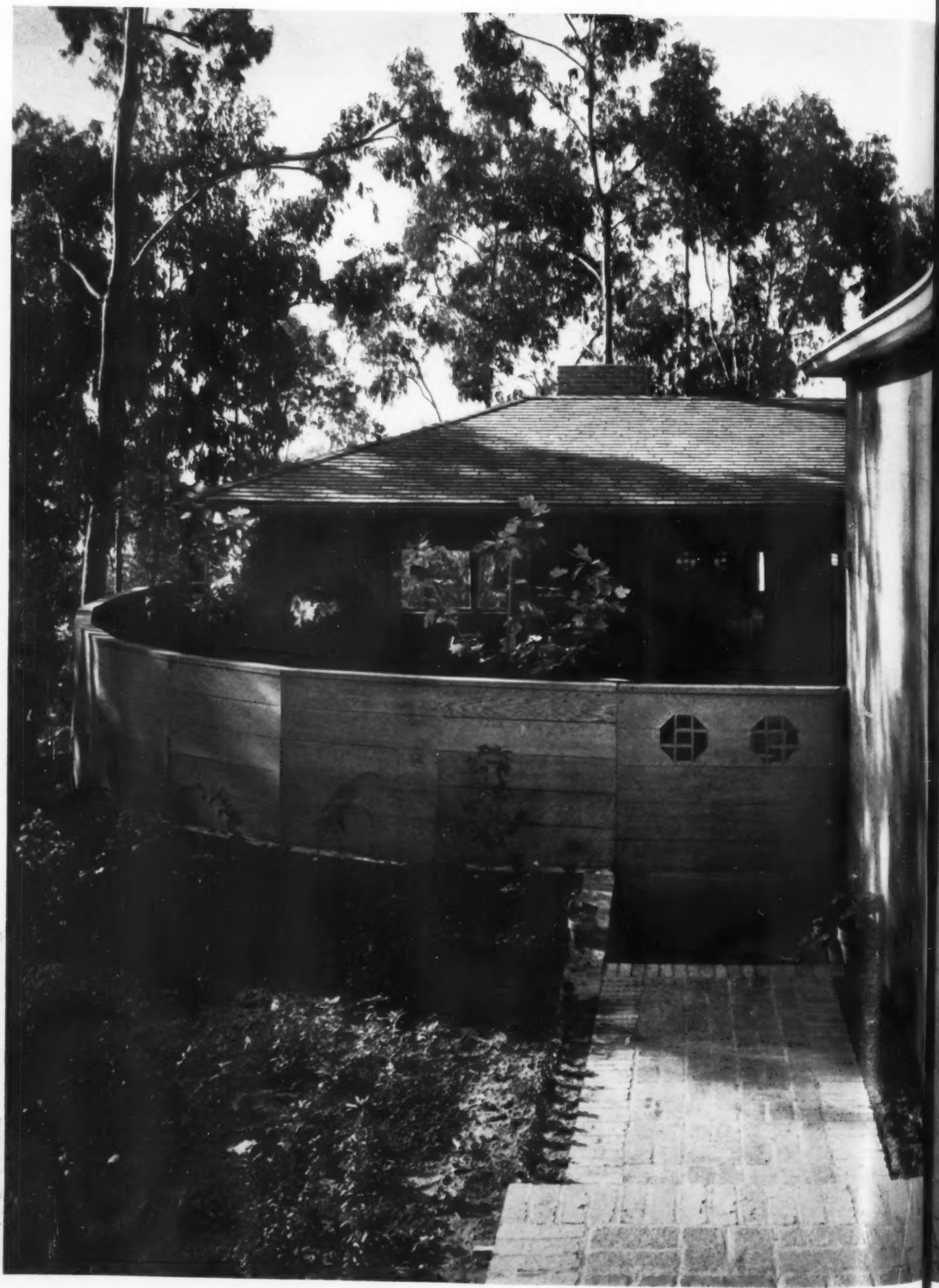


PHELPS BARNUM, Architect

FOR THEIR HOBE SOUND, FLA. home, Mr. and Mrs. Martin J. Quinn, Jr. wanted a small house in which the sense of privacy would be equal to that usually obtained in much larger houses. This was accomplished by placing a pantry between the living and service areas, and a loggia and patio between living and sleeping areas. At the bedroom end of the house, two shower baths are provided which can be directly entered from outside for the convenience of swimmers. The house is of concrete block and reinforced concrete construction, finished in smooth-troweled stucco painted white; interior walls are of plaster, and of wood panelling. Exterior exposed woodwork is cypress, glazed with a white pigment for a weathered effect.

PATIO: view from loggia toward bedroom wing

LOGGIA separates living and sleeping areas



Photos by Roger Sturtevant

CLARENCE W. W. MAYHEW, Architect

THE SITE OF THIS BERKELEY, CALIF. house for Mr. and Mrs. James K. Sebree, is a steep hill, which slopes toward San Francisco Bay. The house takes advantage of the unusual shape of the lot—25 ft. wide at the street, 70 ft. wide at the opposite end—to place the garage at the narrow, or street end, and the main living rooms along the wide side. These rooms all have a view across the bay. The patio, however, faces the opposite direction and is protected from wind by the house. Sliding doors between patio and living room make it possible to unite indoor and outdoor living areas. Exterior is of flush lapped redwood, left to weather in natural color.

Photos by Roger Sturtevant

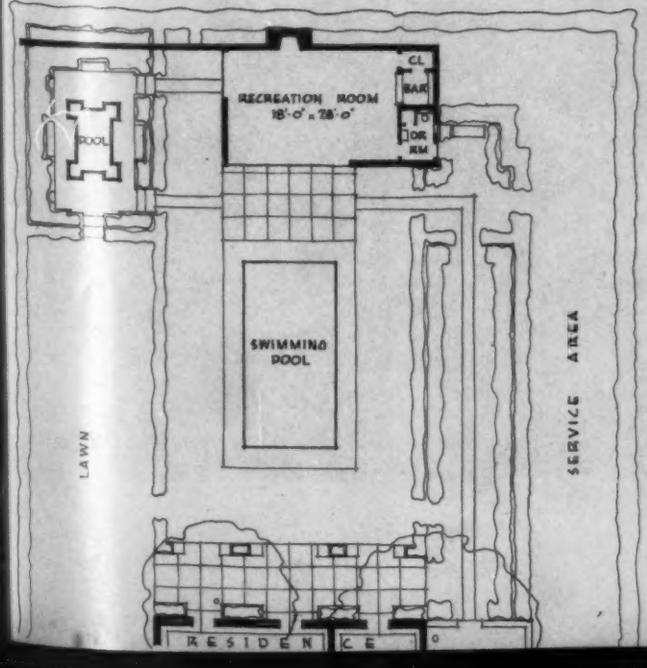
LIVING ROOM, looking toward patio

SLIDING DOORS panelled in woven reeds prevent glare without cutting off the air

LIVING ROOM from patio; dining alcove is at the right

RESIDENTIAL DETAILS—RECREATIONAL

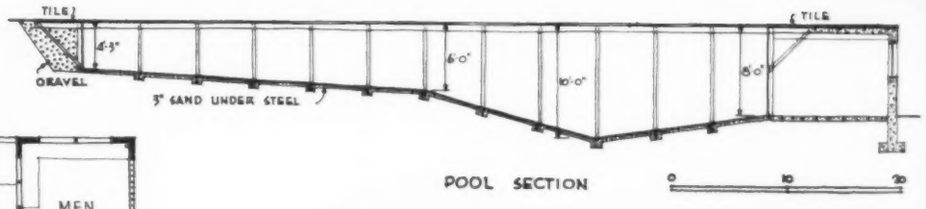
Photos by Elwood M. Payne



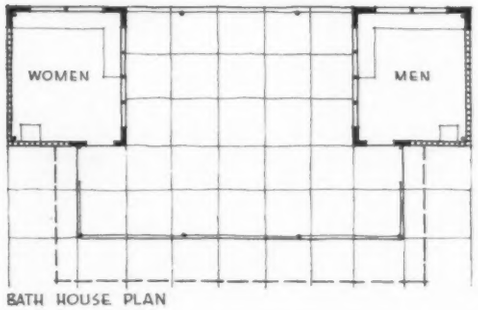
I. JOHN F. STAUB, Architect

THIS RECREATION PAVILION IN HOUSTON, TEXAS, is at the rear of a garden, and is separated from the house by a swimming pool. Because of its eastern exposure, a locally desirable feature, the pavilion is used as an outdoor living area, especially in the afternoons, when the western outlook of the living room is objectionable.

Photos by Hedrich-Blessing



POOL SECTION

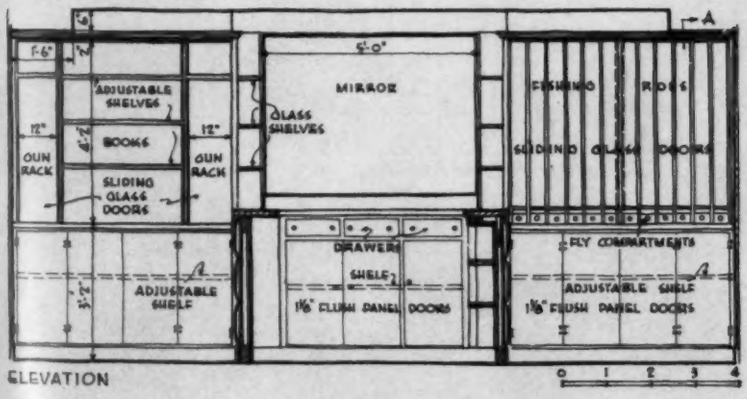


BATH HOUSE PLAN

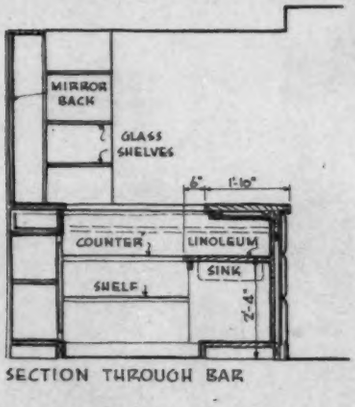
2. WINSTON ELTING, Architect

THE POOL AND BATHHOUSE of this estate in Illinois are located some 150 ft. from the residence. The pool is of welded steel construction; it has no scum gutter and water comes to within an inch of the top. Sides are reinforced to prevent bulging of plates, and all steel is protected with a special aluminum paint and lacquer. The bath house has a steel and frame structure; its screened-in central area is for games. Screens are stretched at top and bottom from steel members of small section and are fastened at sides directly to lally columns.

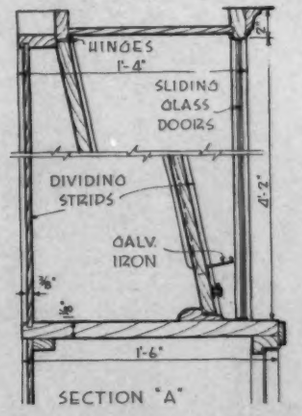
Rudolph Edward Leppert Jr.



ELEVATION



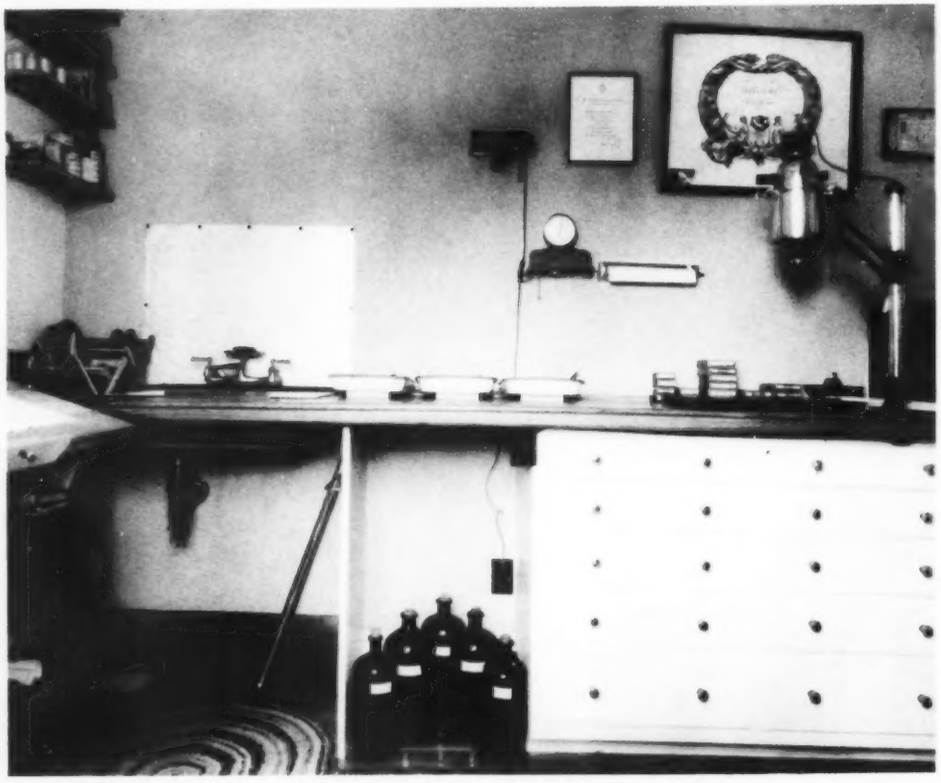
SECTION THROUGH BAR

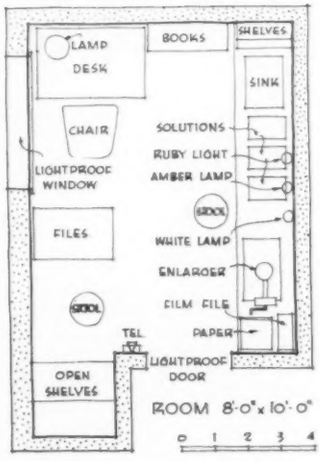


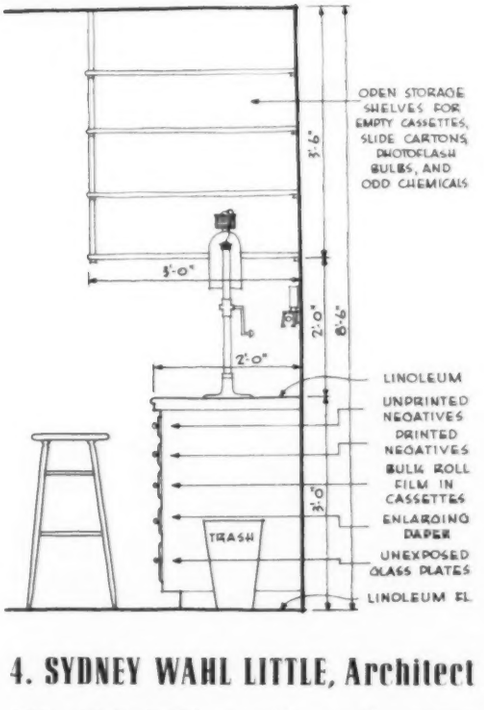
SECTION "A"

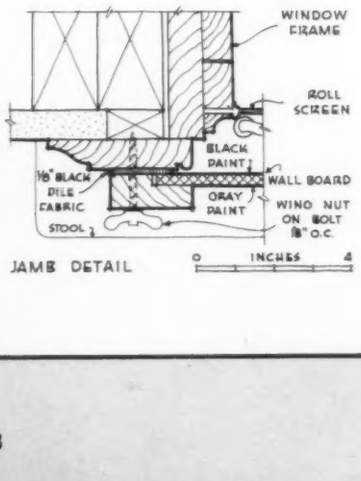
J. G. DEWEY SWAN, Architect

PROVISION FOR STORAGE of hunting and fishing equipment was made in this recreation room in a Connecticut residence. These two racks are protected by sliding plate glass doors. Under the fishing rod rack are drawers for tackle. In addition, there is a completely equipped bar, with a counter surfaced in polished plastic material. The room is large enough to accommodate tables for bridge.





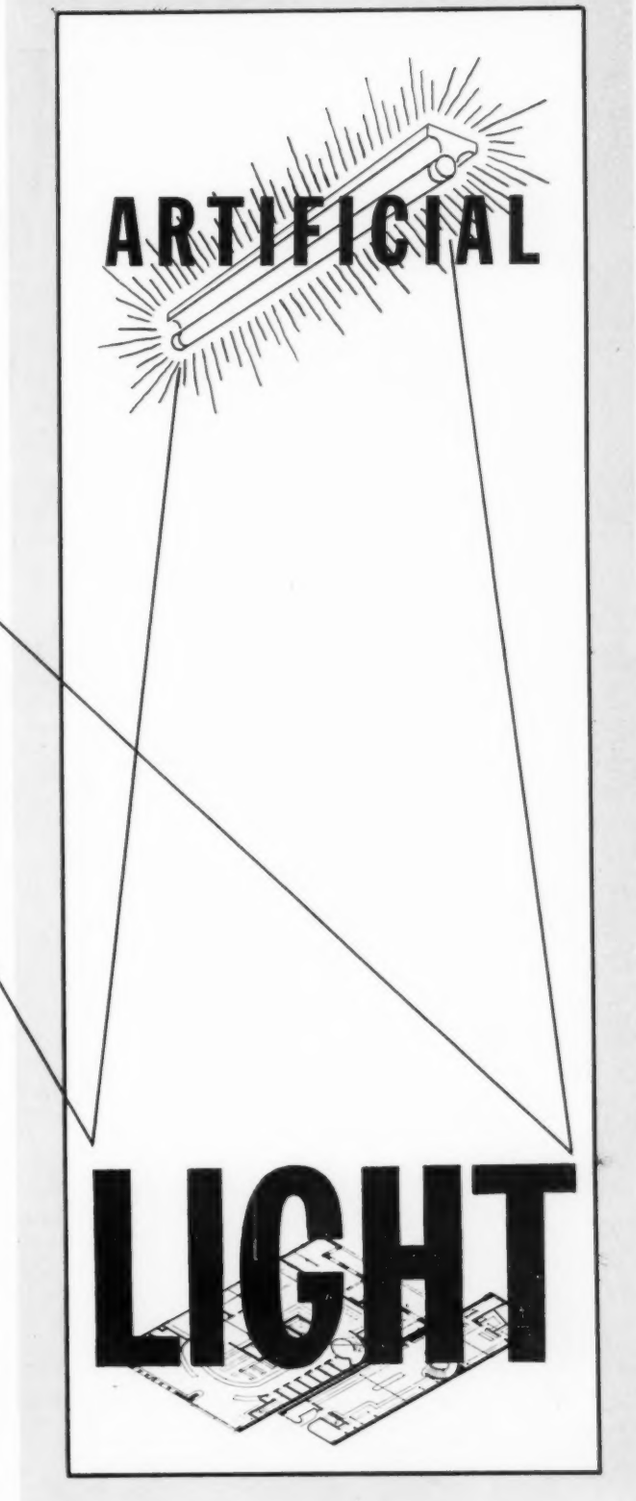




4. SYDNEY WAHL LITTLE, Architect

THIS DARK ROOM provides ample storage, shelf, and counter space. Automatic weatherstrip at threshold and velvet-faced stops make door lightproof. Wallboard panel edged with black velvet can be quickly attached to lightproof window. Equipment includes telephone.

The Integration of NATURAL AND ARTIFICIAL LIGHT



Only the architect, in the last analysis, can achieve the correct integration of natural and artificial light — and the further integration of both with all other environmental factors — which modern building demands. In this issue MR. HANS BLUMENFELD presents the second of two papers on the subject.*

EQUALIZATION of surface brightnesses is the best way to avoid possible glare in general lighting; as no one surface is much brighter than any other, fixation of none is disturbed by glare from brighter neighboring surfaces. Another way, much advertised and widely used, is removal of the sources of light to the ceiling, above the normal zone of vision, resulting in vertical lighting (fig. 1). This method is never quite satisfactory. Either the angle with the horizontal is small and the brightness of the ceiling will be disturbing, when objects of lower brightness are viewed, or the rays within the field of vision are entirely "cut off," and only "down-lighting" remains. However, as the normal line of vision is horizontal, the vertical surfaces should receive the main light (fig. 2). Downlighting reverses this relation in favor of horizontal planes; in addition, it eliminates practically all visible own shadows, while casting hard shadows on the floor. Yet, downlighting is frequently used even in cases where attention should be concentrated on vertical surfaces, such as shelves in self-service stores, or pictures in galleries (fig. 3). In many cases, notably in reading lamps, vertical illumination enforces the adoption of an unnatural bent position (fig. 4).

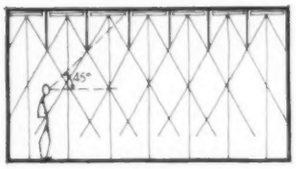
The legitimate place for downlighting is in the illumination of horizontal surfaces, such as horizontal show cases, or tables; it should however be kept in mind that it is not the table that is to be seen, but the object placed on it, which may have predominantly vertical surfaces, as in most industrial work.

In any such case the vertical light is primarily intended for local lighting, and should be compared with the alternative of separating local and general lighting at the source.

For most objects, light incident at an angle of 15 to 45 degrees above the horizontal affords the most satisfactory illumination. This arrangement is possible where the function of the room normally causes all persons to look in one direction only, as in churches or in some types of workrooms; otherwise, if a person looks around, the light will be in his eyes.

*A/R, pp. 49-56, 12/40

PART II



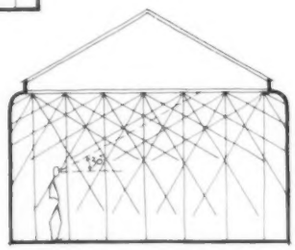


Fig. 1 VERTICAL ILLUMINATION. An unshielded lighted ceiling is glaring (right); glare is avoided by "downlighting" (above) but vertical surfaces are apt to receive too little light

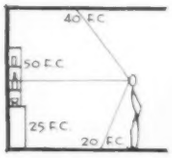


Fig. 2 DESIRABLE DISTRIBUTION OF BRIGHTNESS. Greatest brightness on vertical surfaces in zone of vision; zone below horizon should be half as bright because eyes are more sensitive to light from below

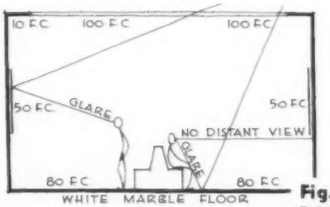
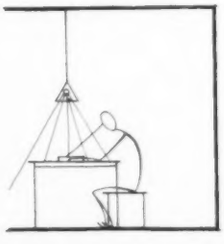


Fig. 3 UNDESIRABLE DISTRIBUTION OF BRIGHTNESS. The average museum room succeeds in coordinating all elements necessary for the prevention of seeing



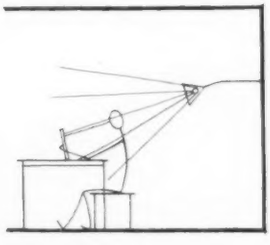
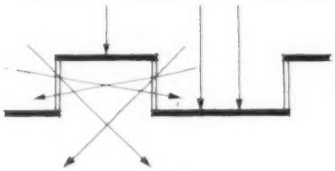
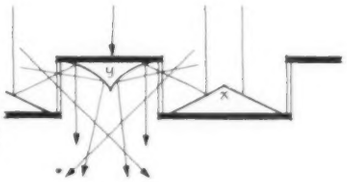


Fig. 4 VERTICAL LIGHTING (left) too often forces an unnatural position. HORIZONTAL LIGHTING (right) permits a natural position

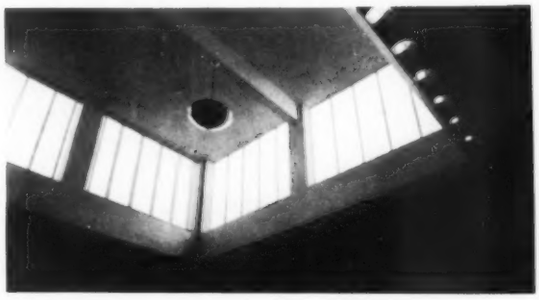


Most of the light of the sky never enters the room; some of the light entering the room goes out again through the opposite window



A bright roof surface (x) at a correct angle will throw part of this light into the room; another reflecting surface (y) directs it down

Fig.5 MONITOR ROOFS



Roger Sturtevant

Fig. 6 CLERISTORY WINDOWS throw high side light on the object without throwing it into the eyes of the spectator. Same result is achieved at night by appropriate arrangement of artificial light

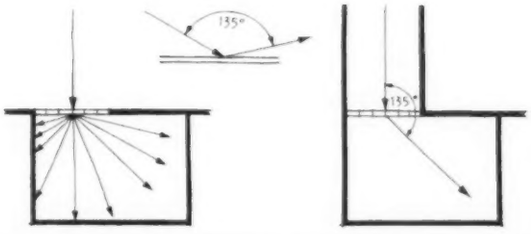
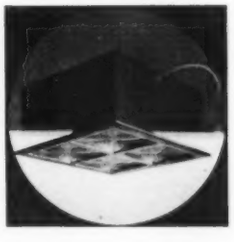


Fig. 7 SKYLIGHTS. Prismatic glass blocks can be used to redirect vertical light into depth of room (left). However, light rays incident at flat angles are redirected to the sky by prismatic blocks (center); hence—for skylights under an open sky—diffusing blocks are preferable



Courtesy Holophane

Fig. 8 LIGHT REDIRECTED DOWNWARDS by prismatic glass . . .

Pittsburgh Reflector Corp.

Fig. 9 . . . or by parbolic reflectors

High sidelight

The need for a more horizontal light, and the difficulty of keeping horizontal skylights clean, has in many cases led to their replacement by high sidelights, such as sheds, monitors, cleristories, or lanterns. This inevitably means a loss of light, some of which may be retrieved by reflection from bright roof surfaces, especially if these are inclined towards the windows (fig. 5). However, in this case it will be the roof that accumulates the dust.

Cleristory or lantern light to some extent solves the problem of throwing horizontal light on the objects, without throwing it into the eyes of the subjects (fig. 6).

Redirecting prismatic glass blocks are also used to achieve a more nearly horizontal illumination, notably in pavement lights. However, they lose any light which is incident from a horizontal direction, and which they redirect upwards. Therefore redirecting blocks of this type are only appropriate for skylights at the bottom of shafts or narrow courts; under an open sky diffusing blocks are preferable (fig. 7).

Similar prismatic glasses are also used in many fixtures for artificial lighting, usually in connection with diffusing and reflecting elements, with the purpose of partial downlighting (fig. 8).

Downlighting

Where downlighting is desired, all light rays are to be redirected vertically downwards. This is most easily achieved by using a parabolic reflector with a point source (fig. 9). Such fixtures may be suspended or recessed into the ceiling. With a narrow beam they are used for spotlighting.

The elements of a parabolic reflector may also be broken up and made part of the ceiling, as in reflecting ridge metal panels, which provide parallel downlighting throughout a room (fig. 10).

In most cases of downlighting, however, the light from the source, whether natural or artificial, primary or secondary, is cut off by vertical surfaces, which may absorb it entirely or reflect it partially. In the "louverglass" these surfaces are of miniature size inside the sheet and vertical to its surface, which, for this purpose, is used horizontally. In all other cases they are larger, and have the advantage not to accumulate dust.

The vertical surfaces may be an essential part of the architecture, such as ceiling beams or coffers, or may consist of built-in metal fins, or of movable louvers; or they may be part of a lighting fixture, arranged in parallel rings or in the form of an "egg-crate." In many fixtures the light reflected by these vertical surfaces is glaring. This can only be avoided by making the surfaces darker, with a corresponding loss in efficiency, or by making them larger, with a corresponding increase in the size of the fixture.

Where the source is a parabolic reflector, this difficulty is avoided, but the ceiling is too dark. Both these defects indicate that downlighting is essentially a method of directed local lighting, and should be supplemented by some other system of general lighting.

Natural and artificial vertical illumination

Skylights and high sidelights are out of reach and hard to curtain. At night their surfaces appear as black holes, contrasting unpleasantly with the balance of the room and allowing a great amount of light to escape towards the sky, where it is worthless even for advertising purposes.

This loss can be substantially diminished if the artificial light is not thrown against the ceiling, but flows parallel to the flux of the natural light. Sometimes this is attempted by arranging downlighting fixtures under the skylight openings or at their edges. If small, these sources are glaring; if large, they obstruct the daylight. The logical solution is to put the artificial sources into the same relation to the room as the natural source, and to arrange them above the opening. Their light must then be diffused by translucent materials in the skylight opening, which will serve in daytime to equalize the light of the sky. In this way perfect blending of the light from natural and artificial sources is possible, and a smooth and unnoticeable transition can be made from day to night illumination. The transition can be automatically controlled by a photo-electric cell, or by a spectro-radiometric photometer.

However, increased distance of the source, loss of light through absorption by the diffusing glass, and in some cases exposure of the lighting fixture to the weather will increase the cost.

Considering the difficulty of protecting skylights from the sun's heat, and also from accumulation of dust, we may well raise the question if the same goal might not be achieved more economically by relying altogether on artificial light, using reflected light from the walls and ceiling. As the number of kilowatt-hours per dollar increases, and as the number of lumens per watt goes up the economic advantage of daylight disappears more and more. Where natural ventilation is replaced by air conditioning, the other great reason for the outside opening disappears, and the open space on the other side of the wall or ceiling becomes merely an enemy to be guarded against by thermal and acoustic insulation, and terribly restricting the freedom of plan.

We might do well to discard our traditional methods, ossified in street patterns and building codes, which call for a bit of outside light and air everywhere, and not enough anywhere; and might accept a clear distinction between two different types of rooms: one without a view, relying entirely on artificial illumination and ventilation, and the other with an outside view, and making the most of it.

Horizontal lighting

In a room with a view, the outside world seen through the window is normally the brightest part of the entire luminous environment, and its relation to the brightness inside the room is of paramount importance. Where dramatization of the view is sought, it may be effectively framed by a darker interior (fig. 11). Livability of a room is better assured by a gradual transition of brightness (fig. 12). The view is disturbed by distracting glare from a bright floor (fig. 13).

With light from one side only, brightness distribution in the room will always be very uneven; less so, however, if the window goes up to the ceiling. With modern methods of construction there is no excuse for cutting out the best part of the light by a heavy window head, which is an atavistic hangover from the stone lintel or arch.

"Double lighting" greatly improves distribution of light in the lower room, and combined with bright re-

flecting walls and ceilings achieves very satisfactory results (fig. 14).

While vertical illumination makes rooms indefinite and objects flat, horizontal lighting achieves brightness distribution in harmony with the axis of vision: walls first, ceiling second, floor third. This emphasizes the shape of the room and the plasticity of the objects (fig. 15).

With two-sided illumination these advantages are partially sacrificed for a more even distribution, essential for most workrooms. This system works well in shallow or high rooms. In the middle of a narrow and low room, however, there will be confusing shadows and glare from the windows on either end; in rooms facing east and west, twilight effects may be experienced, especially around sunrise and sunset.

Sometimes sufficient equalization can be achieved with one-sided illumination by reflection from the opposite wall and the ceiling, or by light from two or three adjoining sides. The results are usually more satisfactory than with illumination from two opposite sides (fig. 16).

It is well worth-while to match the pleasant effects of natural window lighting by artificial illumination. This can be achieved by luminous architecture, or by indirect lighting of walls or of white window curtains. By these means one or more walls may be made the main source of light within a room. There is no sound basis for the dogma saying that the ceiling should always be twice as bright as the walls.

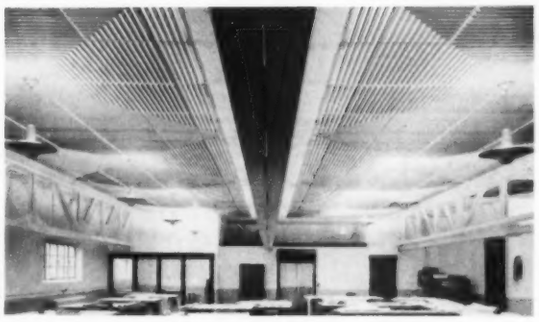
Control of sunlight

The sources of natural illumination, skylight and sunlight, are ever changing. The radiant heat, the abundant light, and the ultraviolet rays of the sun are generally desirable, but excessive quantities of both heat and light may become intolerable, and have to be kept out, without impeding the normal access of sunshine.

No problem exists with a northern exposure. On a south wall a projecting hood, cornice, or balcony will keep out the high summer sun, while admitting the low winter sun, and at the same time will serve to equalize the light (fig. 17). On east and west walls, with the hot summer sun almost opposite the window, a vertical screen is needed for temporary use. Nature furnishes such a summer screen in the shape of the leaves of a tree. They must however be supplemented by man-made means, such as awnings, shutters, blinds.

All of these are far more efficient if applied on the outside. The interval between the protecting screen and the window should be large enough to allow for circulation of air. However, all movable screens are more difficult to handle if located outside the window. They are exposed to the weather and therefore are higher in first and maintenance cost, and they accumulate more dust—though dust may be less objectionable there than it would be in the room.

With protective means on the inside, such as venetian blinds or shades, the absorbed heat is re-radiated or convected into the room. This is especially true of dark surfaces. Only specular reflecting surfaces will not only absorb radiant heat, but will reflect a considerable amount of hot red and infra-red rays. Polished gold is the ideal material; for the time being aluminum or kindred materials will have to do the trick, as in aluminum venetian blinds.

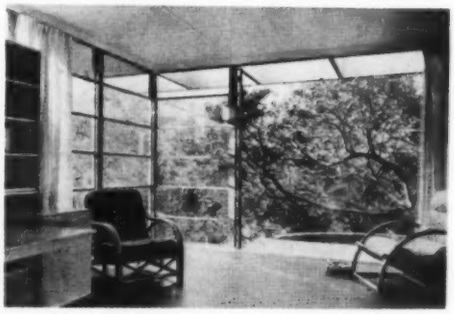


Republic Steel

Fig. 10 WITH CORRUGATED METAL PANS of high reflectivity, the entire ceiling may act as a parabolic reflector, redirecting light downwards

Charles Lorens

Fig. 11 VIEW DRAMATICALLY FRAMED by dark surfaces in room . . .



Fred R. Dapprich

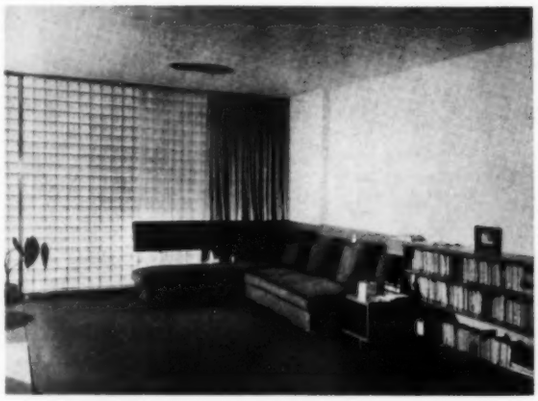
Fig. 12 . . . but equalization of brightness between interior and view enhances livability of room

Julius Shulman

Fig. 13 A BRIGHT FLOOR may detract from view

Courtesy "Glass in Architecture and Decoration"

Fig. 14 LARGE WINDOW with diffusing curtain achieves excellent brightness distribution aided by reflected light from white walls and ceiling



Courtesy "Glass in Architecture and Decoration"

Fig. 15 GOOD DISTRIBUTION OF BRIGHTNESS—wall, first; ceiling, second; floor, third. Proportion of room and shape of objects is brought out by horizontal light

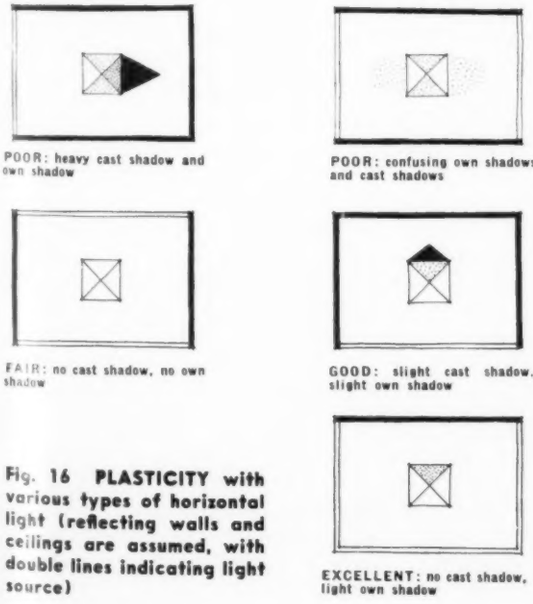

POOR: heavy cast shadow and own shadow
POOR: confusing own shadows and cast shadows
FAIR: no cast shadow, no own shadow
GOOD: slight cast shadow, slight own shadow
EXCELLENT: no cast shadow, light own shadow

Fig. 16 PLASTICITY with various types of horizontal light (reflecting walls and ceilings are assumed, with double lines indicating light source)

Awnings, shades, and curtains are always made out of transmitting diffusing materials; venetian blinds of translucent plastics are also available. Besides keeping part of the sun's heat out of the room, they are also helpful in equalizing brightness inside the room. If used intelligently, they will diffuse part of the light towards the walls and ceiling, which will reflect it into the back of the room. They should diffuse the light entering the lower and middle part of the window, without obstructing the upper part, which throws the light directly into the back of the room. The traditional shade reverses this process and makes matters worse (fig. 18).

Venetian blinds not only diffuse the light, but redirect it towards the ceiling and the back of the room. Directional glass blocks do the same work, with a much smaller loss of light. In order to avoid glare, their use should be restricted to the part of the window above the sight line, the lower part being made with diffusing blocks, or of clear glass (fig. 19).

As glass reflects or absorbs a considerable part of all light incident at angles of less than 30 degrees, a vertical window loses an appreciable portion of the available light, especially where the lower part of the sky is obstructed by dark objects. Use of directional glass blocks on an inclined plane might catch this valuable light and direct it to the back of the room (fig. 20). At the same time the view seen through the clear glass of the lower half would decrease in brightness, because part of the sky would be out of the picture. An objection to such an arrangement may be the difficulty of keeping the inclined surface clean.

While with southern exposure sunshine must be controlled by horizontal elements—hoods, awnings, venetian blinds, or horizontal prisms in glass blocks—on northeastern and northwestern walls the rays of the low-standing sun can be better controlled by vertical units. In the Washington, D. C. office of the Pittsburgh Plate Glass Company this has been done by a horizontal sawtooth window (fig. 21), which may be regarded as a monumental vertical louver. Shutters and venetian blinds, turning on a vertical axis, might as well be constructed on the same principle. While they would fail to redirect the light towards the ceiling, they would be easier to clean than horizontal blinds (fig. 22).

In the "louverglass" the small reflecting surfaces inside the pane are immovable, but according to the setting of the pane they may be used either as horizontal or as vertical louvers, or diagonally.

Horizontal and vertical surfaces have been combined into a kind of monumental "egg crate" in the Brazilian Pavilion at the N. Y. World's Fair (fig. 23). The familiar stone grilles of Spanish architecture are based on the same principle. The sun is kept out, except when it stands directly opposite the windows, and the light is reflected into the room by the white surfaces of the crate—provided they are kept white.

It is much easier to keep these surfaces clean if one big box is used instead of many small boxes. Such a big reflecting box is an enclosed balcony or a "loggia" with bright ceiling and walls; besides being a highly efficient means for sun protection and light distribution in the room behind, it is a very valuable room in itself.

Selective filters

In order to exclude radiant heat, while admitting

light, selective filters have been developed. Special glasses are available which absorb the infra-red and red rays, while transmitting the cooler part of the spectrum. Only light of bluish color and decreased brightness is transmitted, while about half of the absorbed heat is re-radiated into the room, and half to the outside. However, if the glazed surface is extended sufficiently to compensate for the loss of light, the total amount of heat will be almost the same, and in some cases greater than it would be if clear glass had been used.

If the filtering glass is used in double glazing, together with clear glass, the result is slightly better; but the necessity to clean four large surfaces instead of two may prove prohibitive except with sealed double glazing.

One of the best selective filters is water. Half an inch will absorb practically all infra-red rays, without noticeably diminishing the light. Water might well be used for protection against radiant heat, notably on horizontal skylights. Condensation on the bottom of the glass would be a problem. It may be less serious in uses outside a building, as on hoods.

Water would have the further advantage not to accumulate dust. Extension of translucent surfaces may defeat its purpose, if it leads to neglect of cleaning. In vertical windows often half of the light is absorbed by dirt, and in skylights as much as 80 per cent.

Screens also absorb a considerable amount of light. A screen, built on the principle of miniature venetian blinds, reflects some light towards the ceiling; it will, however, lose its efficiency with the accumulation of dust on the miniature horizontal metal fins.

Artificial illumination in rooms with windows

With glass blocks or well-diffusing sheet glass it is possible, though expensive, to effect a gradual transition from daylight to night illumination by locating the artificial source outside the window; both natural and artificial light will be filtered through the same diffusing medium. With transparent materials this cannot be done, because a small source would be glaring and a large source would obstruct daylight and view. Either continuity of direction has to be sacrificed, by introducing an additional source (fig. 24a), or continuity of illumination must be interrupted by lowering a white curtain over the window opening (fig. 24b); after this interruption light comes in from the same direction as before; at night it is received by reflection from the curtain, and in daytime by transmission through the window. This solution is necessary in particular cases, as in art studios, and is desirable in many other rooms, where furniture has been arranged for use in daylight. In such rooms the sources of light, preferably fluorescent tubes, are often hidden by window valances. These lighting valances, if close to the wall, are inefficient; if strongly projecting, they may obstruct the room. In most cases it will be better to throw the light on the curtain from a cove or fixture placed on the ceiling.

Where translucent walls are not lighted from the outside, they should also be covered at night by reflecting screens. It is often claimed that no curtains are needed with walls of glass blocks. This is only true for semi-opaque translucent materials, which reflect about as much light as they transmit. Such materials may be used with daylight from the outside and artificial light from the inside. They will be less than 50 per cent efficient in either case.

Most glass blocks have a much higher efficiency for light transmission. They accomplish the functions normally allotted to the light window curtain: they diffuse the light and obscure the view from the outside. They cannot, however, do the work of the heavy shade or the venetian blind, to wit: throw the sun's heat back out of the room in daytime, and throw articial light back into the room at night.

At night brilliant translucent glass walls may have some advertising value in business buildings; however, as always, you cannot eat your pie and have it. The light that goes after the customer in the street is lost to the worker in the shop. This loss not only decreases the total brightness of the room, but makes the brightness distribution less equal than it would be with a reflecting surface.

In most cases it will be preferable to separate the functions: reflect the light back into the room, and entrust the advertising to luminous signs alone. Usually translucent walls do not harmonize too well with such signs.

Automatic control of transition from daylight to artificial illumination is also possible with window lighting. However, because of the use of shades, blinds, etc., there is some risk that the brightness at the "electric eye" will not correspond to the brightness at the working surface.

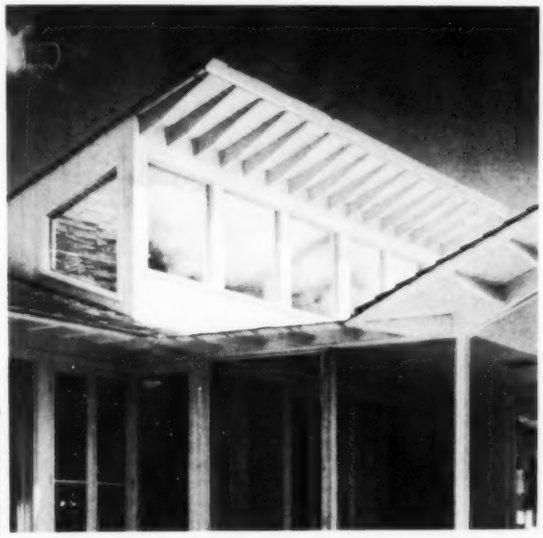
Translucent walls, affording neither a view nor natural ventilation, should really not be compared to transparent walls or windows. As with skylights, the alternative is the reflecting surface. It is merely a question of cost whether a wall should be built of glass blocks or of a solid material painted white; sources of light in both are substantially equal. This should also be considered in using glass blocks for interior partitions. The low reflection factor of a glass partition makes it a negative factor of the luminous environment, if it is not lighted from behind, just as a black wall is a negative factor.

Local lighting

Where concentration on a seeing task is required, local light is helpful by making the task brighter than the balance of the visual field. It is hardly ever achieved by redirection of daylight, but almost exclusively by artificial illumination, which makes it easy to shield the source from the eye. A point source produces harsh shadows and often causes secondary glare. This is avoided by using an extended source, such as fluorescent tubes, or translucent or reflecting diffusers. Where a very high brightness—over 100 f. c.—is required, fluorescent tubes are the only solution because incandescent lamps produce too much heat.

The location of the source must be adapted to the specific task. A source above the head produces downlighting effects, which are not always desirable; a source between the eye and the object is necessarily limited in extension. A source behind the person is the best solution for subjects with normal vision, but will produce glare in spectacles, if less than 30 degrees above or 15 degrees aside the line of vision.

Flexibility is the most important point in local lighting. Floor and table lamps may often be in the way. A better solution is suspended lamps and long wall brackets.



Hedrich-Blessing

Fig. 17 HOOD OVER WINDOW designed to admit winter sun, exclude summer sun, and equalize the light inside the room

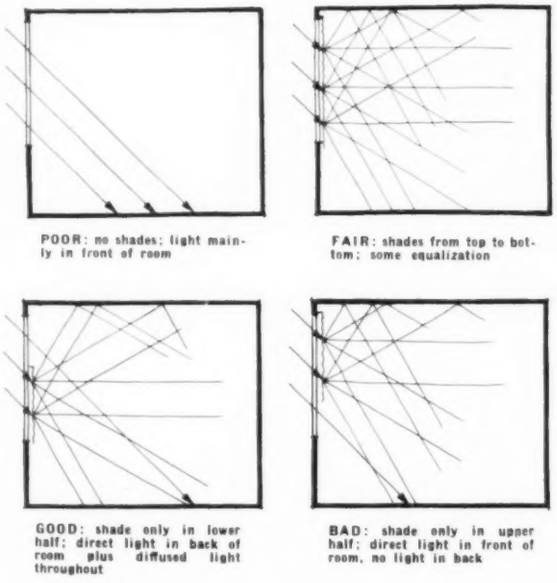
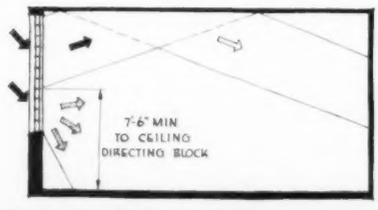

POOR: no shades; light mainly in front of room
FAIR: shades from top to bottom; some equalization
GOOD: shade only in lower half; direct light in back of room plus diffused light throughout
BAD: shade only in upper half; direct light in front of room, no light in back

Fig. 18 EQUALIZATION OF LIGHT BY USE OF SHADES



Owens-Illinois Glass Co.

Fig. 19 EQUALIZATION OF LIGHT BY USE OF GLASS BLOCKS. Here diffusing blocks are used above eye height and directing blocks above to light back of room

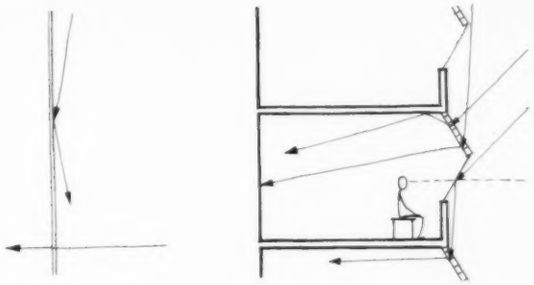
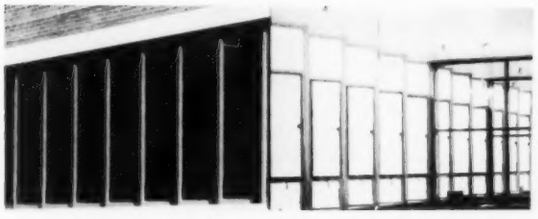


Fig. 20 SINCE CLEAR GLASS TRANSMITS light at large angles but reflects it at small ones (left), an arrangement of directional glass blocks and clear glass (right) might be useful in many locations. Here directional glass blocks catch sky light and redirect it to back of room while view through clear glass is protected against glare from sky



Joseph W. Molitor

Fig. 21 WITH NORTHEASTERN OR NORTHWESTERN EXPOSURE, the sun may be kept out by vertical — rather than horizontal — louvers. Here, alternating panes of clear and opaque glass form a monumental vertical "venetian blind"

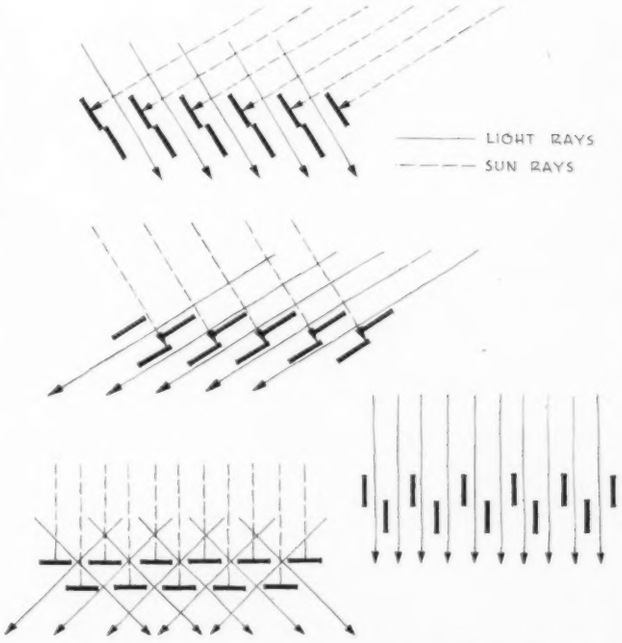


Fig. 22 VERTICAL, MOVABLE LOUVERS admit light, exclude sun

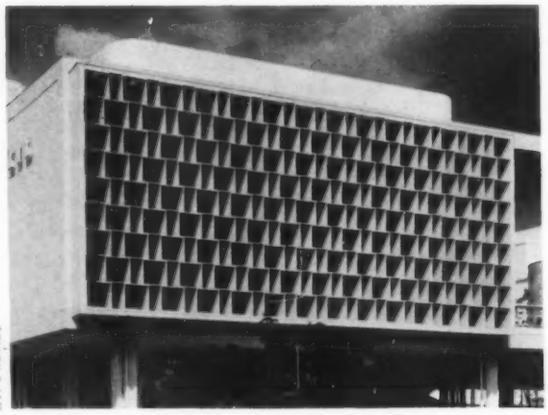


Fig. 23 MONUMENTAL EGG-CRATE BAFFLE reduces glare, excludes sun, admits light — part direct and part reflected

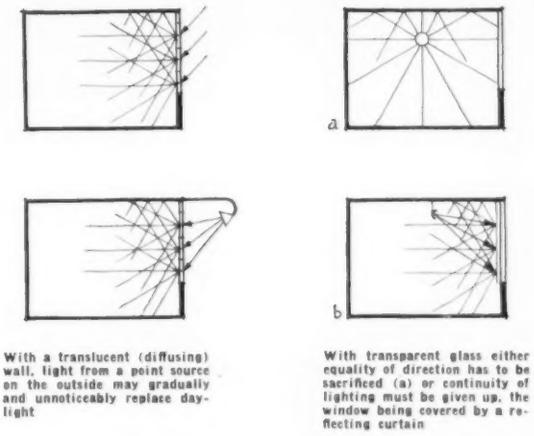

a
b
With a translucent (diffusing) wall, light from a point source on the outside may gradually and unnoticeably replace daylight
With transparent glass either equality of direction has to be sacrificed (a) or continuity of lighting must be given up, the window being covered by a reflecting curtain

Fig. 24 TRANSITION FROM DAYLIGHT TO ARTIFICIAL ILLUMINATION

so arranged that they can be freely moved and twisted in any direction, or be pushed back to the ceiling or wall if not used.

Many fixtures now on the market unnecessarily obstruct the line of vision in daytime; most force the person using them into a certain fixed position, often an unhealthy one, instead of being adaptable to the needs of the user.

Combination of general and local lighting in one fixture is often attempted, but seldom fully successful. Such fixtures make it impossible to adapt the brightness contrast to individual needs. Normally brightness contrast between the locally lighted object and its surroundings should be between 2:1 and 5:1. This relation should in no case be exceeded within the central part of the visual field, within an angle of 30 degrees. As for the balance of the room, there is some reason for the general assumption that dark surroundings are restful for the eyes. In small rooms, where distance adaptation is impossible, looking into the dark is the only means to relieve the strain of constant near vision. In large rooms some relaxation is provided, if the general brightness is well equalized, and is not less than 1/5 to 1/10 of the highest local brightness.

Where dramatic effects are desired, the aim is not equality of brightness, but contrast. Window displays need a special type of lighting, which should be brighter than the street outside; this attracts attention and eliminates glare of the window glass. Artificial lighting alone can achieve this, and is therefore rapidly replacing daylight in the illumination of show cases and show windows. This fact should lead to a renaissance of the arcaded shopping street, with the shadow of the arcade in turn increasing the brightness contrast in favor of the display.

Thermal and acoustic insulation

Convection of noise and heat through the window glass can be overcome to a considerable extent by using two panes with a dehydrated and, partly evacuated hollow space between them. This is done in glass blocks; the same principle is used for sealed double and triple clear plate glass, known as thermopane.

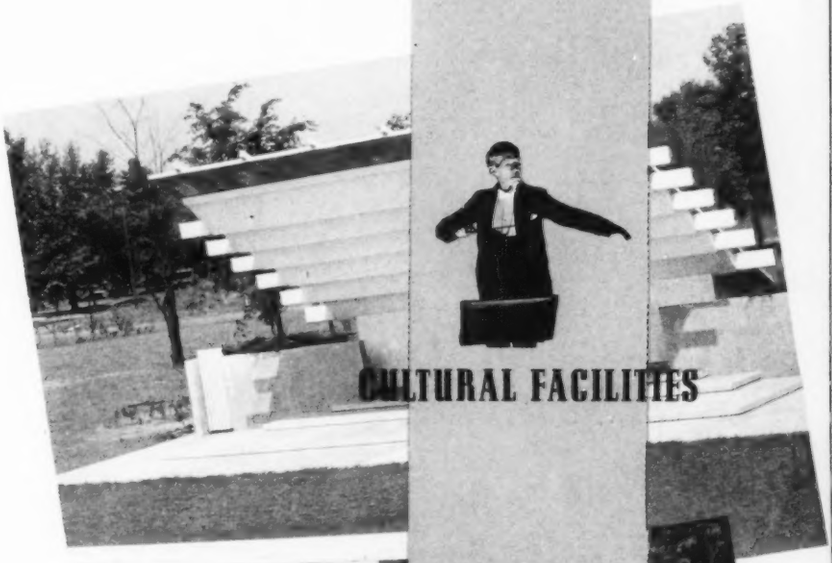
Insulation against radiant heat is more difficult; it can probably never be achieved by the use of transmittent filters alone, but can be arrived at by the use of reflecting screens, both fixed and movable. Removable screens allow for radiant heat in winter, as do also hoods over windows facing south.

The most serious objection against wide expanses of glass is the excessive reflection of sound, often complicated by vibration of the pane. Possibly some translucent plastics may prove more satisfactory in this respect. Any surface treatment diffusing light will also help to diffuse sound, but such surface is more difficult to clean. This is least objectionable where the surface is broken only along vertical lines, as in ribbed or fluted glass.

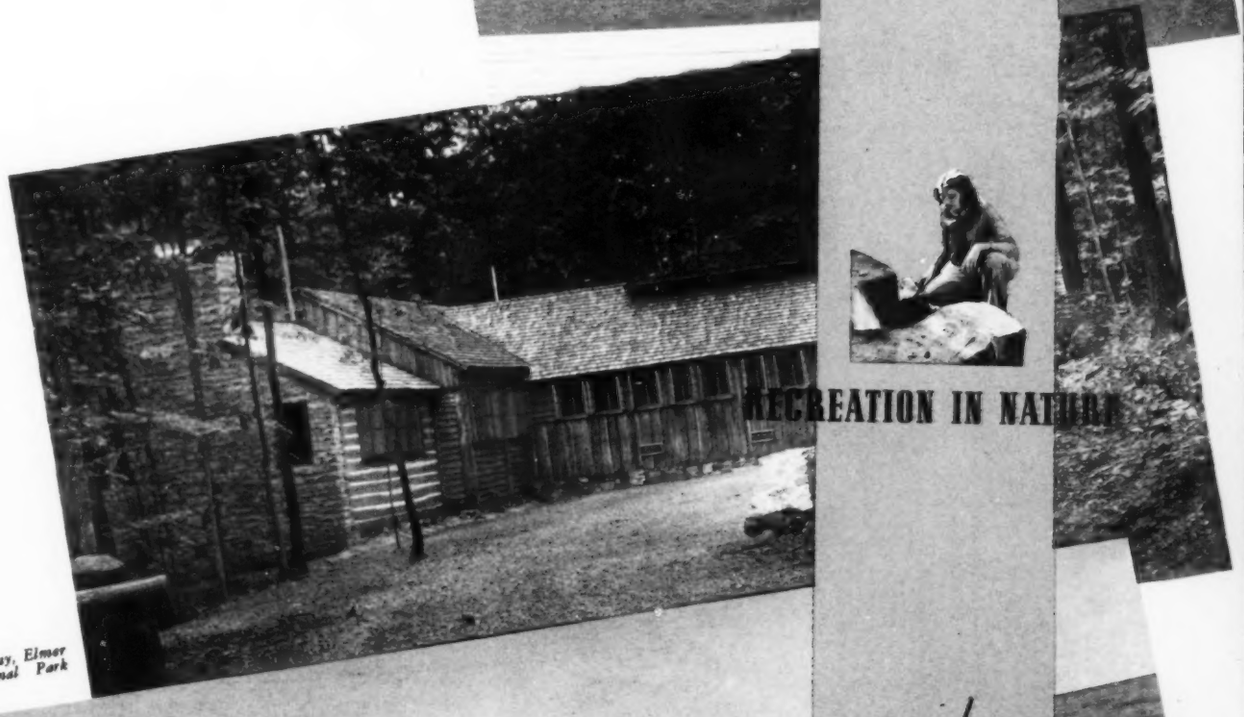
Air conditioning, by eliminating dust, may incidentally make it easier to solve the acoustic problems of glass. On the other hand, it makes protection against radiant heat more urgent than ever.

Thus illumination is affected by many other elements of design, and in turn affects them. With the rapid increase of scientific knowledge and technical means the advice of the illuminating engineer becomes as indispensable to the architect as consultation by the structural engineer became long ago. However, the lighting specialist's demands must be integrated with all other factors of human environment. This is the architect's job, and control of light is part and parcel of it.

RECREATION STRUCTURES

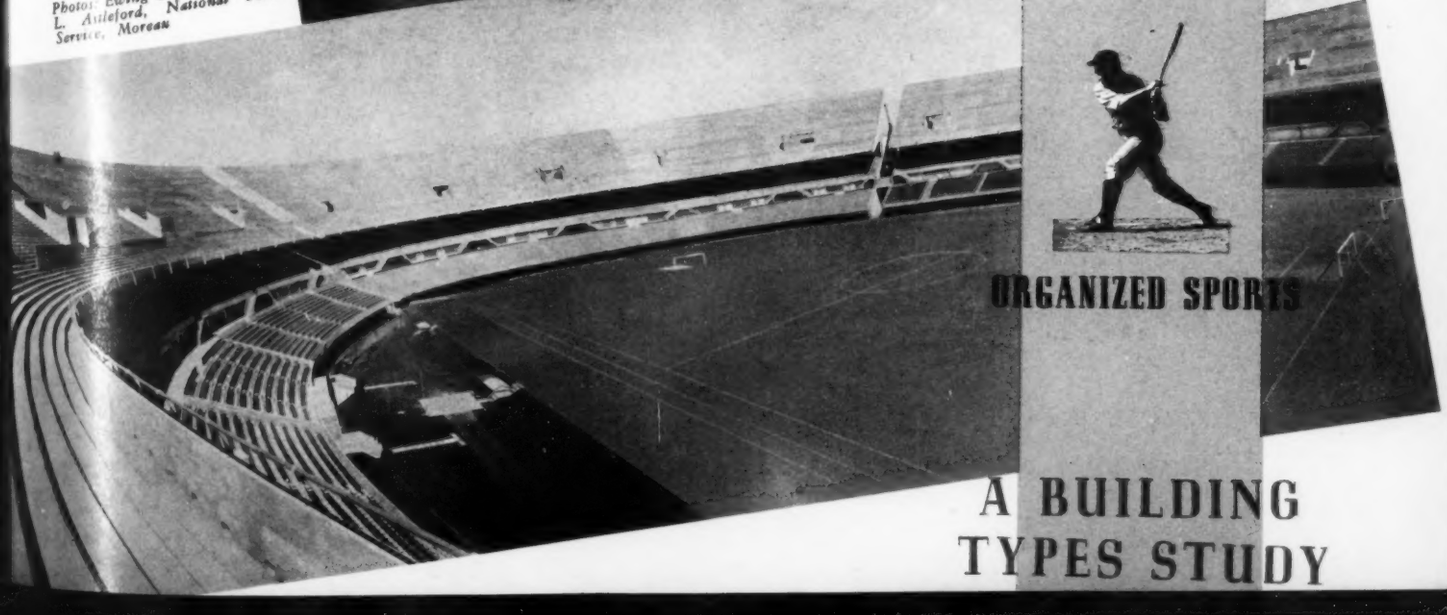


CULTURAL FACILITIES



RECREATION IN NATURE

Photos: Ewing Galloway, Elmer L. Astleford, National Park Service, Moreau



ORGANIZED SPORTS

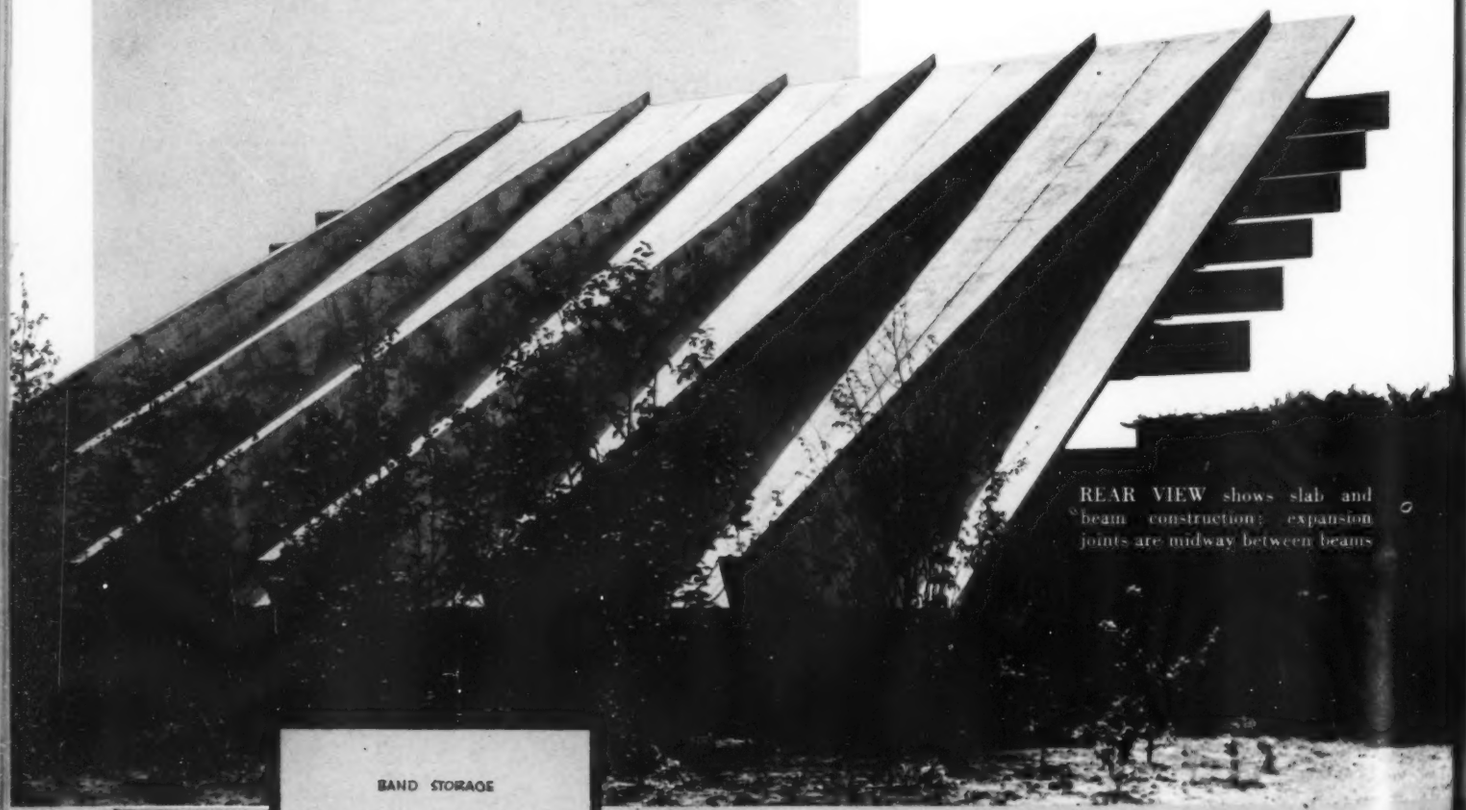
A BUILDING TYPES STUDY

OUTDOOR MUSIC AND DRAMA REQUIRE

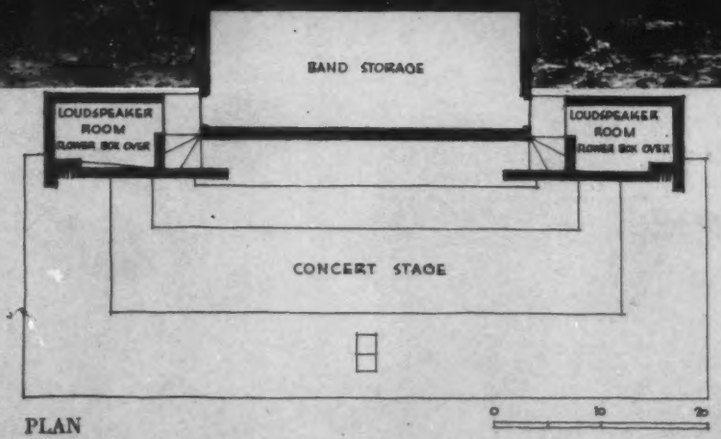
TWO ART-FORMS are peculiarly suited for outdoor presentation: Music and Drama. Outdoor theaters remain, essentially, adaptations of Greek forms, sometimes with the pattern of the modern indoor theater superimposed upon the older scheme. Some problems, however, have been subjected to scientific analysis. Design of seating areas is similar to stadium design, discussed in the accompanying *Time-Saver Standards*. Lighting for night performances is handled as in indoor theaters. Sound control poses a two-fold problem: Acoustic control, to permit the audience to hear the performance properly; and elimination of extraneous sounds. Little has been accomplished in this latter connection.

BAND SHELL design is primarily an acoustic problem. The form of the reflector has to be designed to eliminate any "focussing" of sound at one point in the audience. If sound is to be reinforced electrically, provision has to be made for necessary apparatus. Band storage space and dressing rooms are usually required.

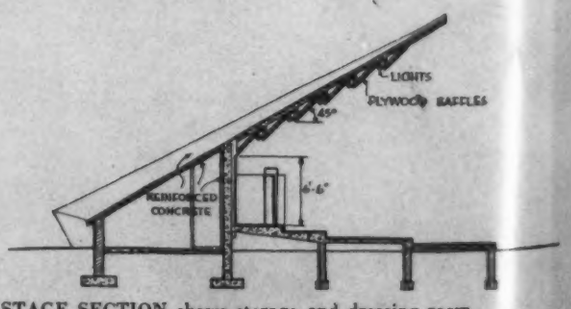
BAND SHELLS



REAR VIEW shows slab and beam construction; expansion joints are midway between beams



PLAN



STAGE SECTION shows storage and dressing room

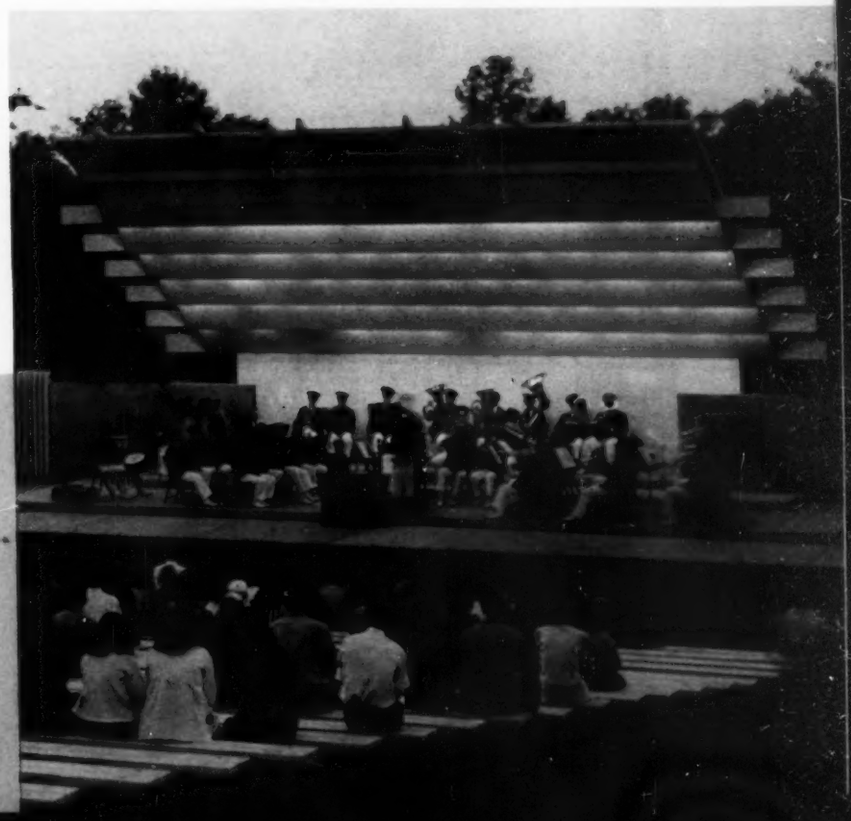
SCIENTIFIC DESIGN

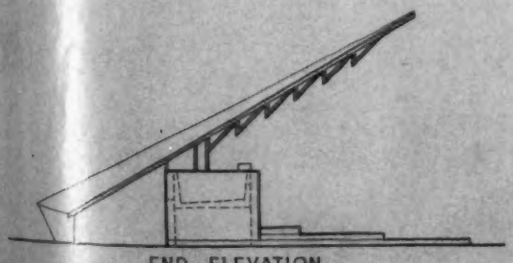
Milwaukee News & Sentinel

TEMPLE OF MUSIC, WASHINGTON PARK, MILWAUKEE, WIS.: FITZHUGH SCOTT, ARCHITECT. Conventional in form, this band shell was built of concrete at a cost of approximately $100,000. Auxiliary rooms are contained in low portions at sides of the main shell. In front of the shell are a wide apron and an orchestra pit with access from below: thus the structure might serve for outdoor pageants, plays, etc.

MUNICIPAL BAND SHELL, MIDLAND, MICH.: ALDEN B. DOW, ARCHITECT. The unusual form is claimed to have several advantages: low cost; elimination of any tendency to focus soundwaves; control of soundwaves ordinarily dissipated over the audience's heads; and maximum flexibility of orchestra-seating — large or small orchestras sound equally well. The 3 in. concrete slab roof, hung from cantilevered concrete beams, supports plywood sound reflectors which conceal lights and pocket undesirable sounds.

Photos by Elmer L. Astleford



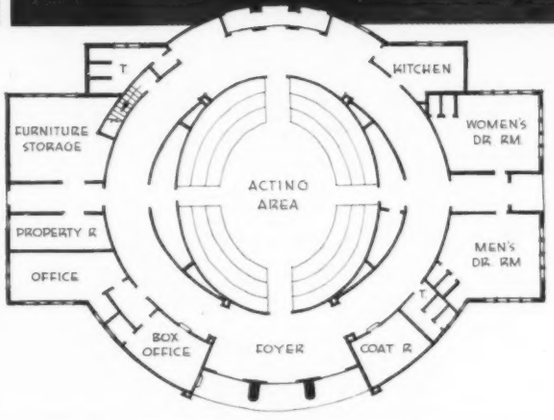


END ELEVATION

SECTION showing loudspeaker room

THEATERS

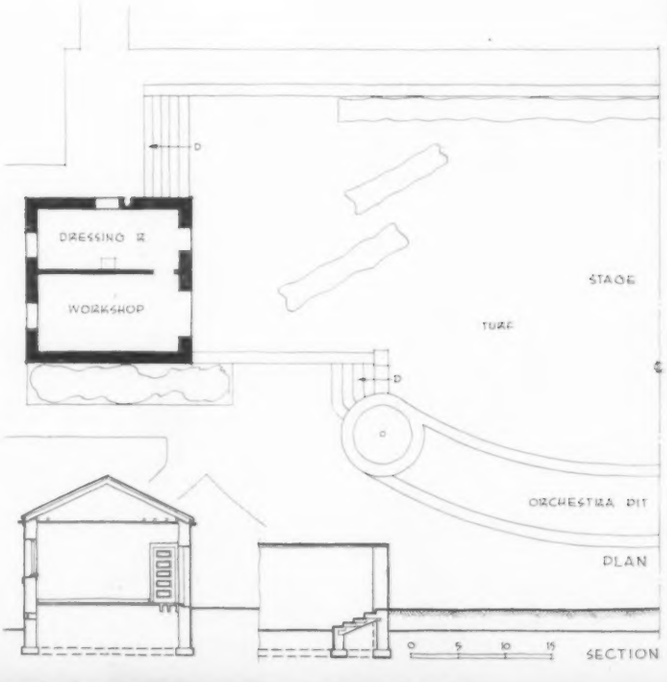
Charles Bell



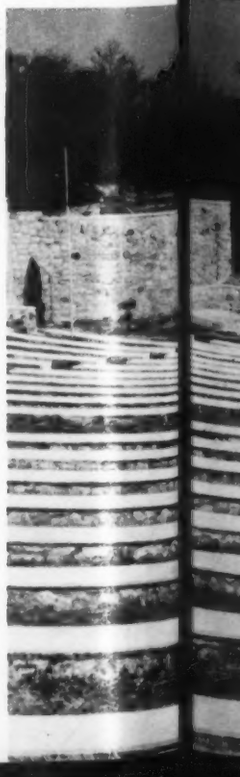
PENTHOUSE THEATER, UNIV. OF WASHINGTON, SEATTLE, WASH. is planned for intimate productions, in which the audience, limited to 170, become almost participants. Opened in May, 1940, this theater is of a type which evolved after successful years of experimenting by Glenn Hughes, Director of Washington University's Drama Division. Structure is of plywood.

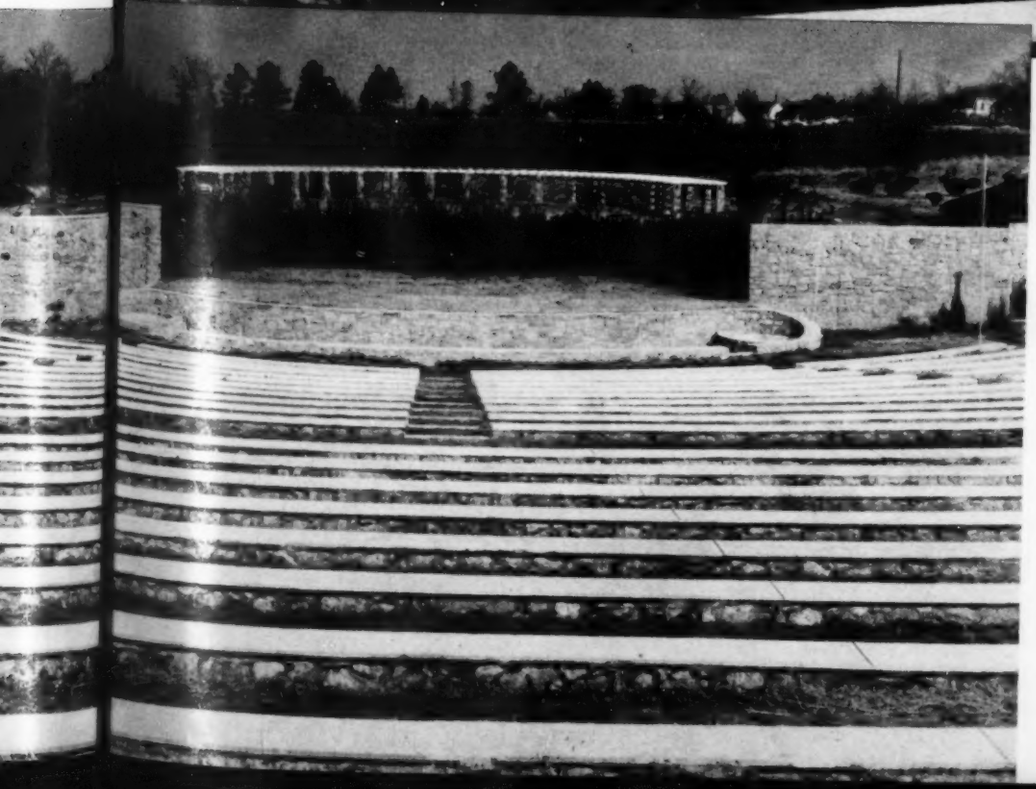
LITTLE THEATER, RALEIGH, N. C.: THADDEUS B. HURD, ARCHITECT. The amphitheater, designed by R. J. Pearse, which is an integral part of this little theater project, makes use of ticket booths, etc., in the lobby area of the theater building.

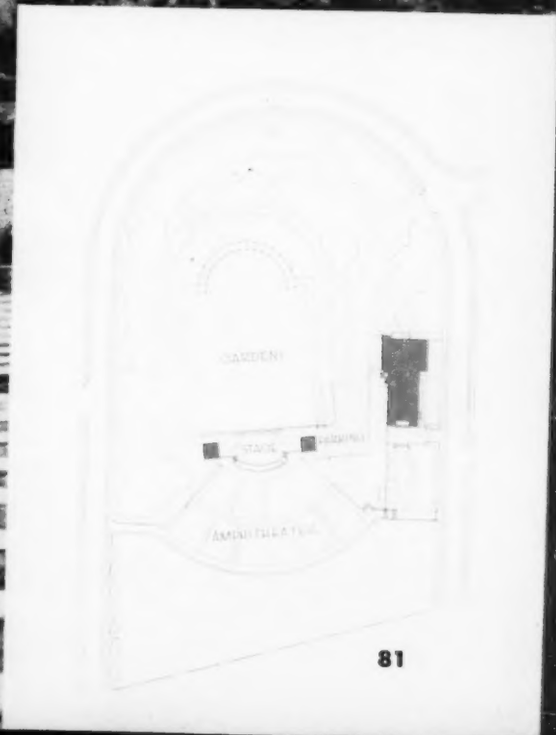
Design of outdoor theater seating space differs slightly in principle from design for band shell or stadium audiences. In the case of concerts, while it is desirable that every member of the audience see the performers, it is not absolutely essential; satisfactory hearing is most important. Also, the band shell stage is often below or level with the lowest row of seats. In theaters, both indoors and out, satisfactory vision is at least as important as hearing. The stadium has a large "stage" before it, with action dispersed over every part of the field; the theater audience views a small concentrated area.



James Joyce





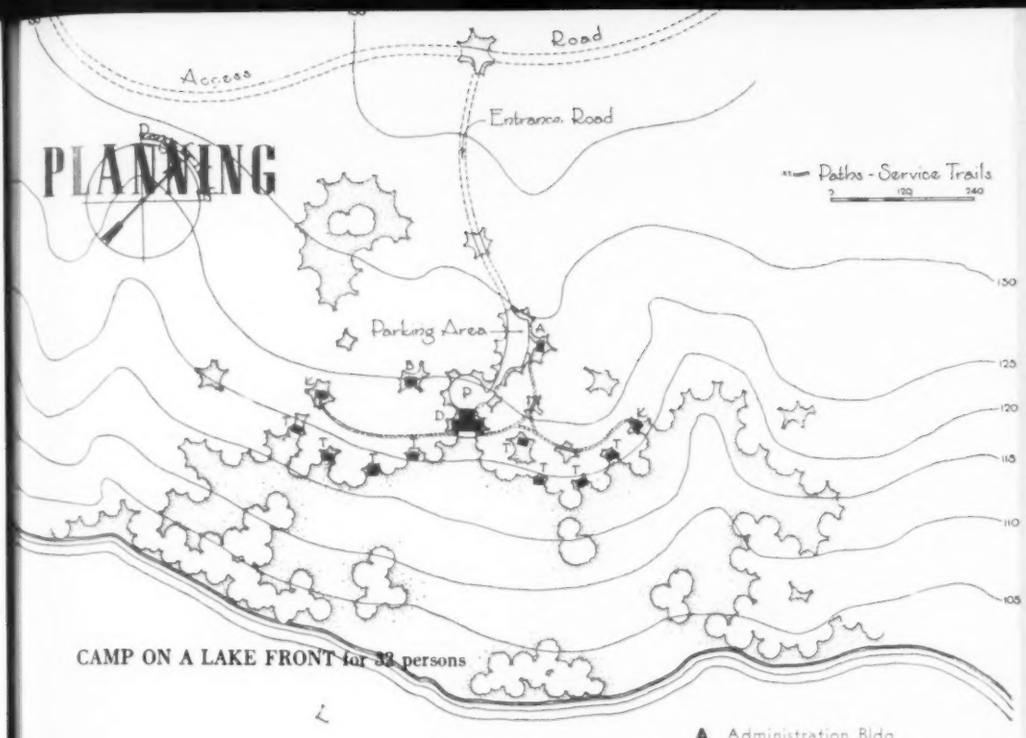


RECREATION IN NATURE BENEFITS FROM P

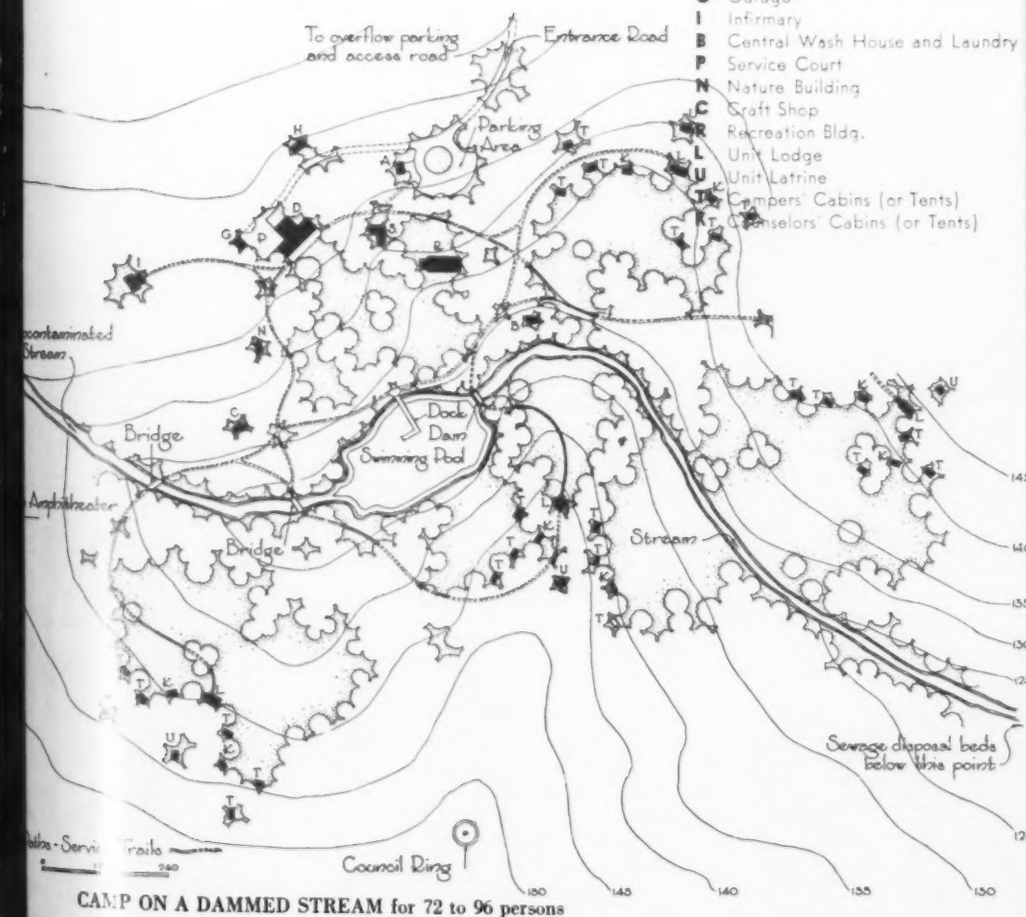
THE EXISTENCE OF PARK COMMISSIONS, many of which have achieved enviable reputations, is justification enough—if any were needed—for the statement that enjoyment of nature increases when sound planning principles are applied. Under supervision of park departments efforts of landscape and regional planners, of building designers, and of experts in the field of recreation, are coordinated. Such simple structures as the entrance pylon and sign below, and the bridge and bridle path, have to be related to one another, and designed to fulfill their several functions.

Photos: National Park Service, Ewing Galloway

PLANNING

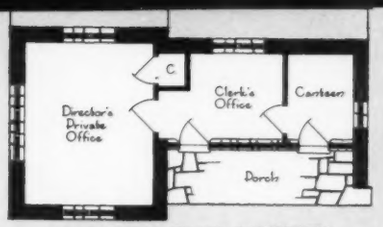


CAMP ON A LAKE FRONT for 32 persons

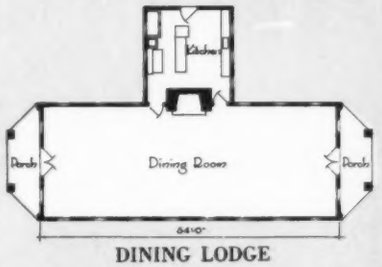


CAMP ON A DAMMED STREAM for 72 to 96 persons

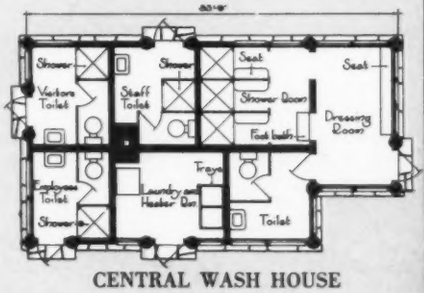
A Administration Bldg.
D Dining Lodge
S Staff's Quarters
H Help's Quarters
G Garage
I Infirmary
B Central Wash House and Laundry
P Service Court
N Nature Building
C Craft Shop
R Recreation Bldg.
L Unit Lodge
U Unit Latrine
T Campers' Cabins (or Tents)
K Counselors' Cabins (or Tents)



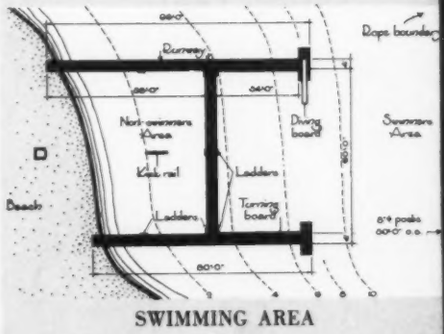
ADMINISTRATION BUILDING



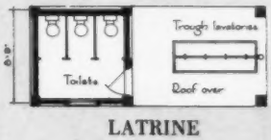
DINING LODGE



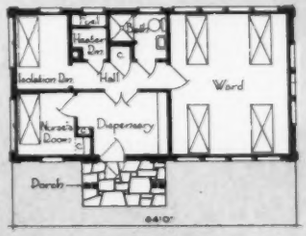
CENTRAL WASH HOUSE



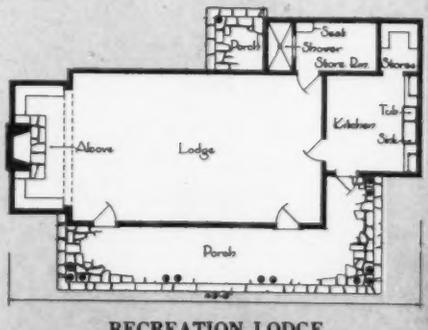
SWIMMING AREA



LATRINE



INFIRMARY



RECREATION LODGE

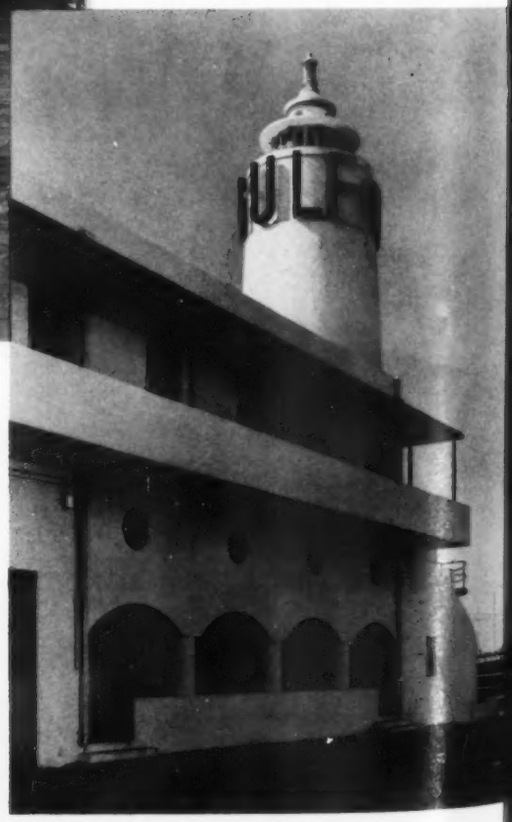
THE ORGANIZED CAMP shows application of planning principles reported by the United States National Park Service. The average capacity ranges from 25 to 125 campers; smaller and larger numbers may be justified by special conditions, but are considered uneconomical. It is now common to group a camp of more than 32 persons in units of 16, 24 or 32 (max.). Central facilities are provided for administration, dining, medical care, and mass recreational and cultural activities. Outlying units, each a short walking distance from this "administrative" central area, are colonies of sleeping cabins or tents. Each unit centers around its unit lodge, and has a unit wash-house and latrine. This organization allows groups having common interests to congregate, and facilitates health supervision, particularly in children's camps. The accompanying plans are chosen from typical examples published in "Organized Camp Facilities" (Nat'l Park Service, Washington, D. C.).

TO ENJOY NATURE

From the ubiquitous hotdog stand, which mars so many scenic highways, to such luxurious establishments as Sun Valley, business has found ways to serve the American in search of recreation. Indeed, recreation has become a major industry; and good design, commercial as well as aesthetic, benefits both the pleasure-seeker and the merchant.

Photos by Gottscho

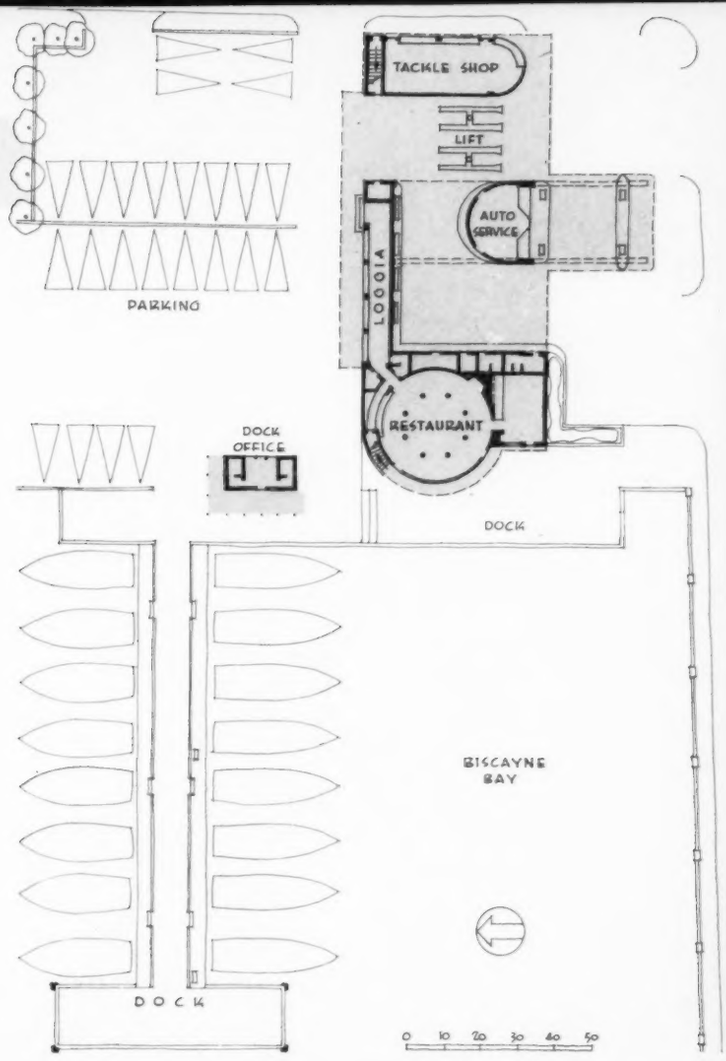
NIGHT VIEW from land side shows concession



HOTEL ROOMS overlook bay

WE NEED COMMERCE

SERVICE STATION AND HOTEL, GULF CORP., MIAMI BEACH, FLA.: POLEVITZKY AND RUSSELL, ARCHITECTS. Here in one development are service station, hotel, parking space, fishing-tackle concession, restaurant, and radio station. The building stands at the entrance to Miami Beach, and is therefor more imposing than a service station would normally be. The service station accommodates both automobile traffic over Miami's Municipal Causeway and fishing boats at the Floridian Pier and Gulf Dock. The tower houses the fishing fleet's radio room; its sign is both a beacon and an advertisement. Hotel (on second floor) provides cheap quarters for attendants. Third floor contains a one-bedroom apartment for the building's manager. Structure has reinforced concrete skeleton built on concrete-capped piles; tower is poured concrete.



HOTEL LOBBY is small, and has dumb-waiter to restaurant below. Future extension of building may occupy north half of lot

SPECTATOR ACCOMMODATIONS FOR ORGANIZED

NEED FOR ACCOMMODATING SPECTATORS has brought business into the field of organized sports. Size of stadium, grandstand or bleachers depends on type of sponsoring educational institution and municipality; number of students, faculty, alumni, townspeople; athletic relations with and proximity to other municipalities. Surveys of high school grandstands indicate that for small communities — up to 5000—stands have seating capacity equal to 25% of population. For larger towns —up to 50,000—a 10% ratio is more common.

SHAPE OF STAND depends on sport for which it is designed. Straight or slightly curved stands are suitable for football, track, and general entertainments, curved or angled stands for baseball. Shallow curves have been used for dual-purpose stands; or baseball field is laid out with first-base line paralleling a straight stand. Orientation of stand, and so of playing field, should be such that sun does not shine in players' eyes. This means that, for center of each time zone in United States, short axis of football field should run about 50° east of true north; line from first to third base of baseball field, about 72° east of true north. Maximum variation due to changing location within time zone is about 80°.

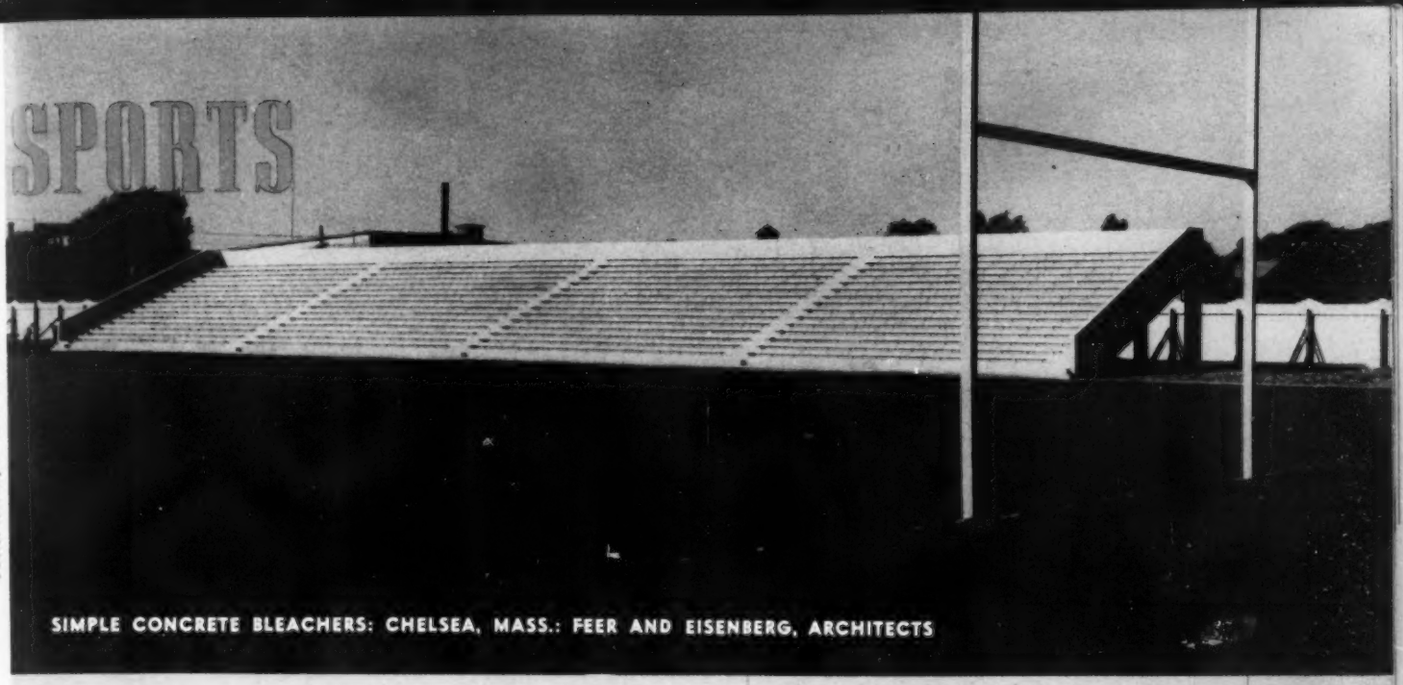
STADIA

Arthur Bauer

CIRCULAR STADIUM: RIVER PLATE CLUB, BUENOS AIRES, ARGENTINA: JOSE ASLAN, HECTOR EZCURRA, ARCHITECTS

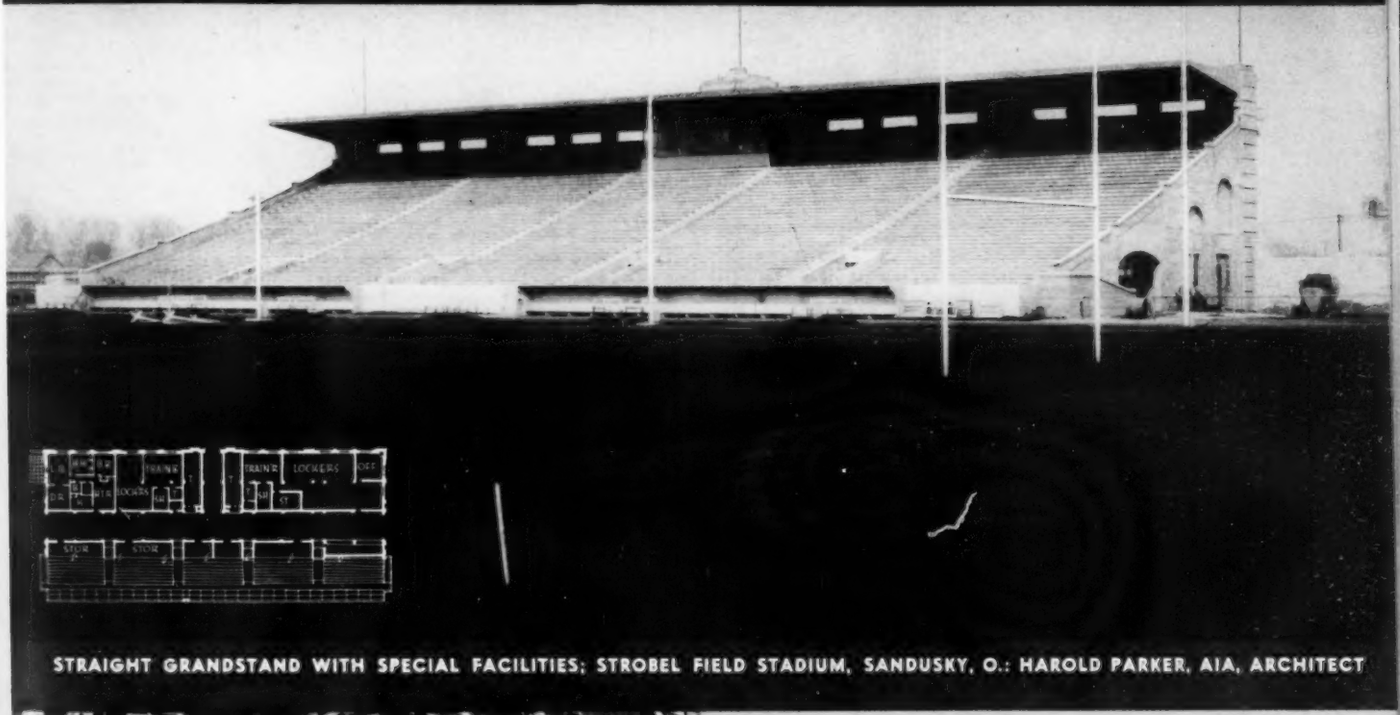
Photos courtesy Portland Cement Assn.

SPORTS

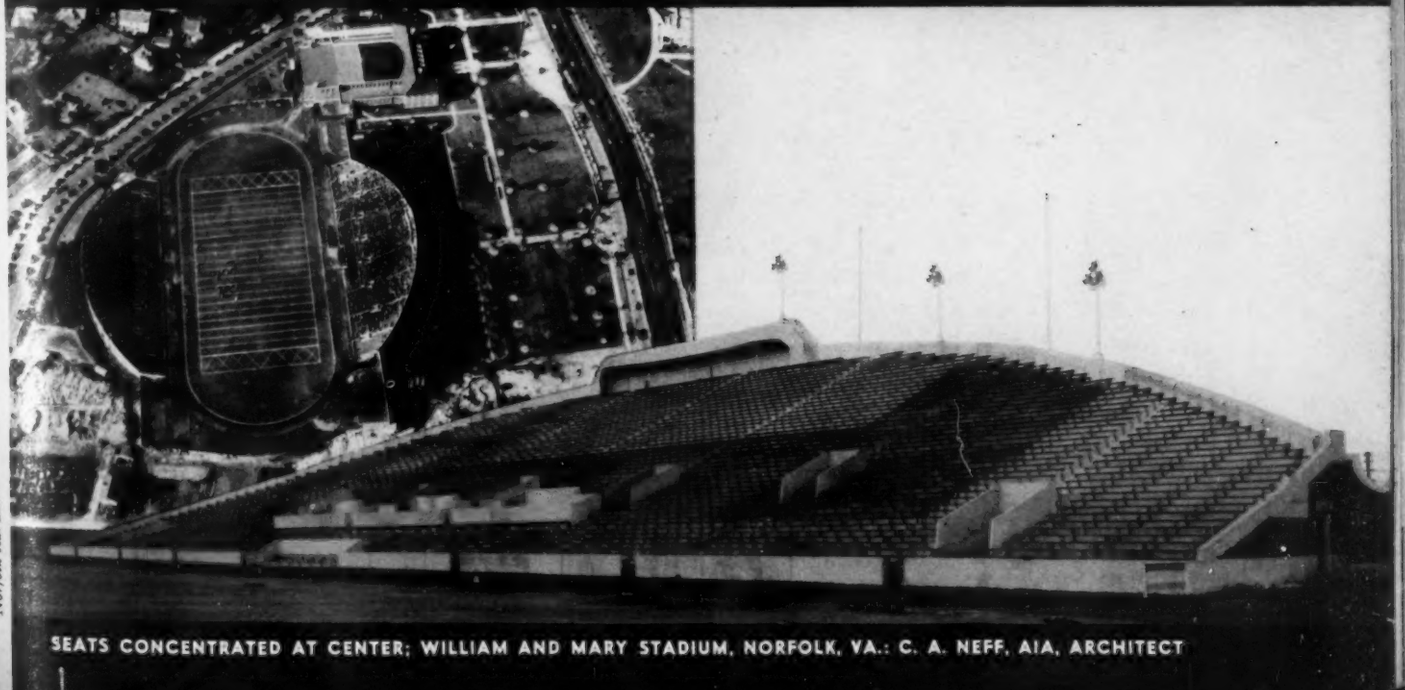


SIMPLE CONCRETE BLEACHERS: CHELSEA, MASS.: FEER AND EISENBERG, ARCHITECTS

Photos courtesy Portland Cement Assn.

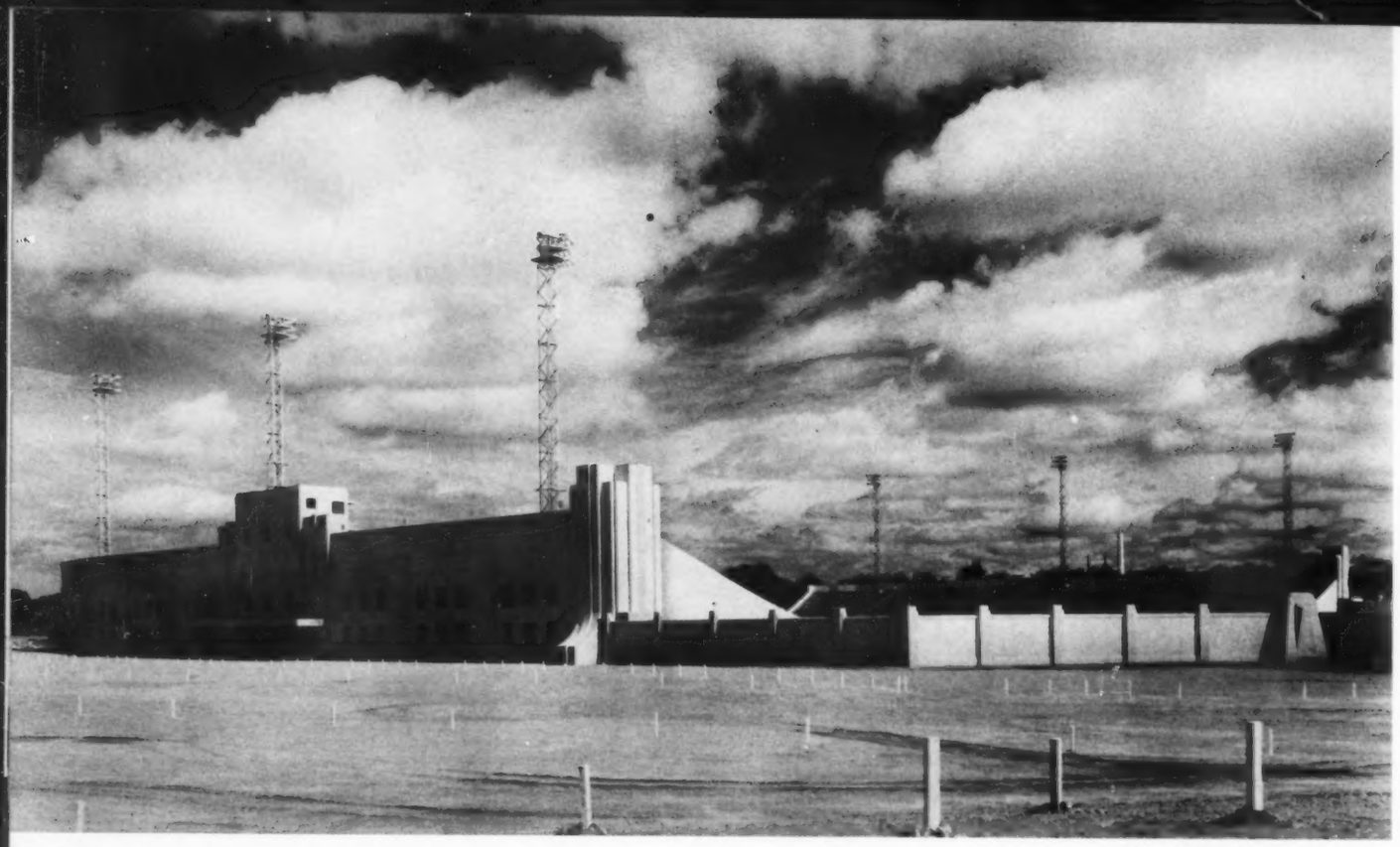


STRAIGHT GRANDSTAND WITH SPECIAL FACILITIES; STROBEL FIELD STADIUM, SANDUSKY, O.: HAROLD PARKER, AIA, ARCHITECT

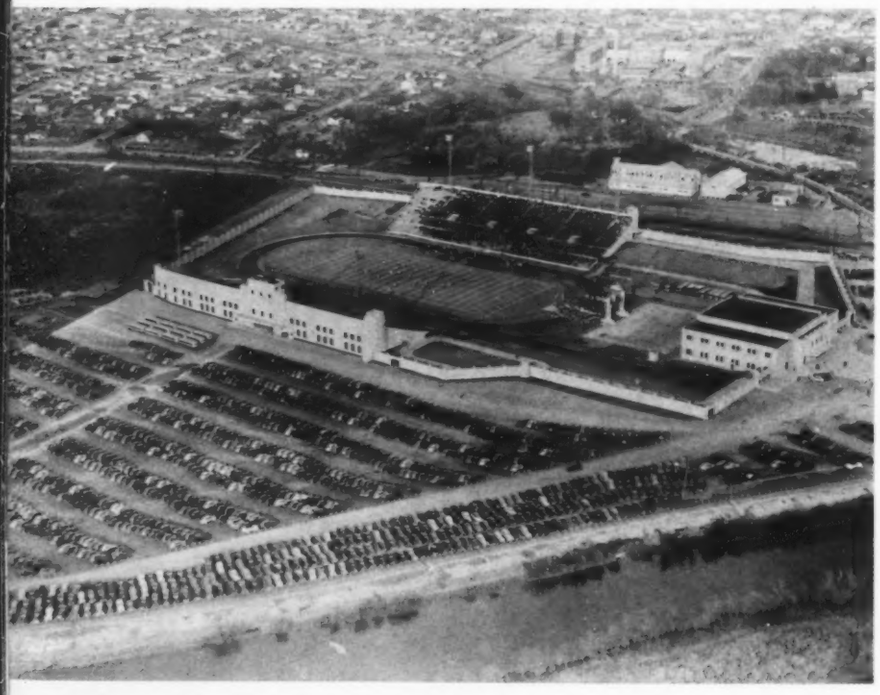


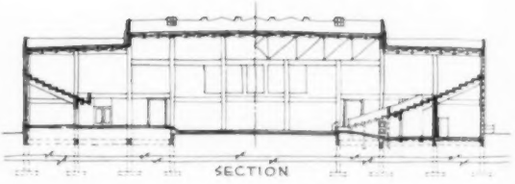
SEATS CONCENTRATED AT CENTER; WILLIAM AND MARY STADIUM, NORFOLK, VA.: C. A. NEFF, AIA, ARCHITECT

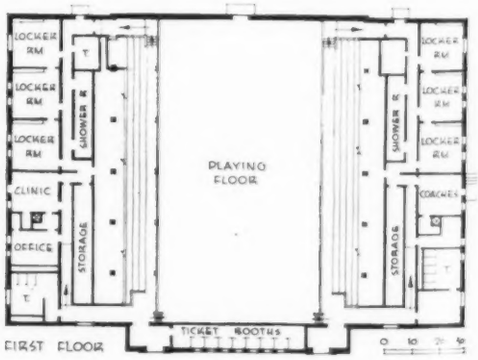
Norfolk Ad. Bd.

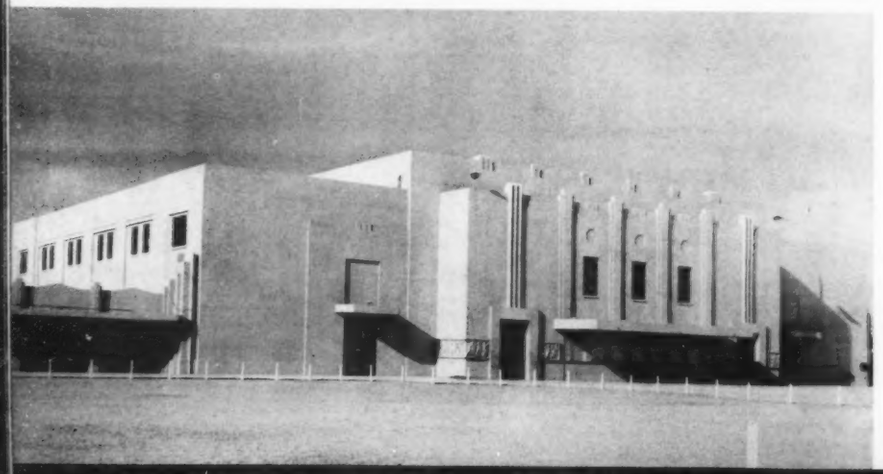


Photos by Wm. Langley, Denny Hayes









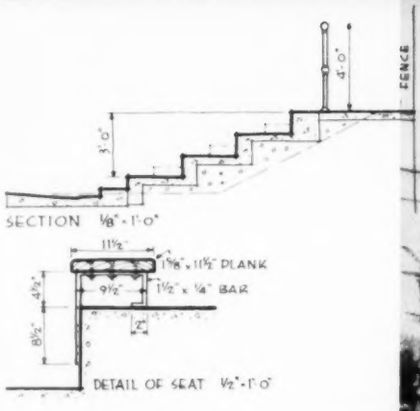
ONE OF THE LARGEST in the country, this athletic plant has two principal units: Stadium, consisting at present of two grandstands designed for future expansion into a horseshoe shape; and field house. Grandstands, 135 by 390 ft., seat 23,457 spectators (horseshoe will seat 40,000) who can exit in 10 minutes through ramped vomitories. Space under stands accommodates entire audience in case of rain. Playing field design conforms to AAU requirements. Fieldhouse, 125 by 165 ft., seats 3,000, has provisions for basketball, volley ball, tennis, wrestling, boxing. Structures are concrete, and cost approximately $765,000.

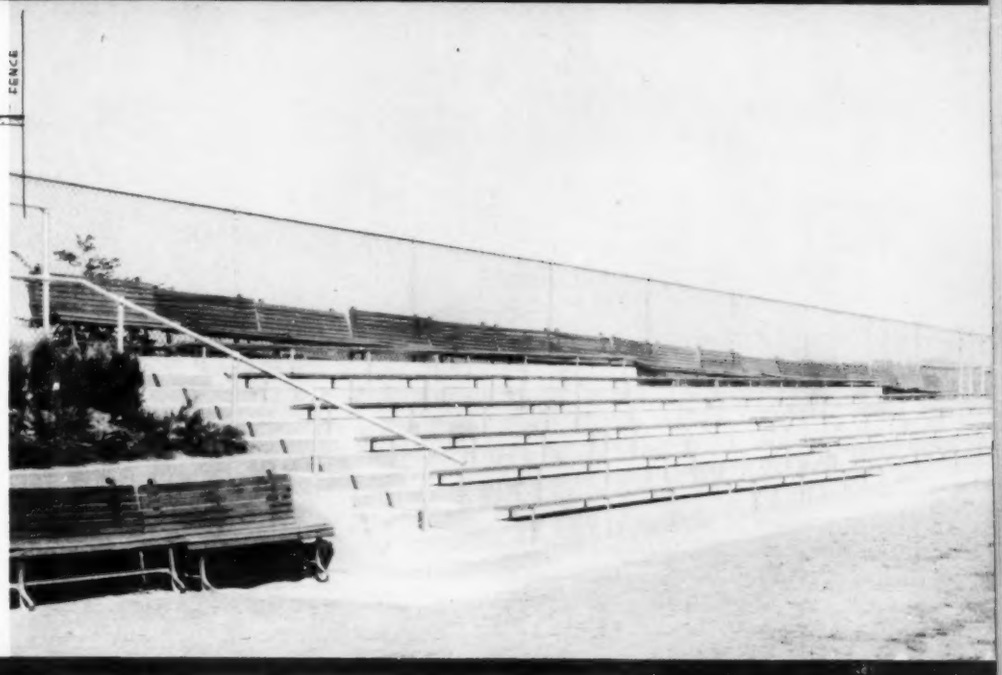
COMPLETE ATHLETIC PLANT FOR DALLAS, TEXAS, HIGH SCHOOLS: HOKE SMITH, ARCHITECT

BLEACHERS

Usefulness, and hence popularity, of community playgrounds is increased when bleachers are provided; and small school fields also benefit. Here, on a level site, precast riser bents are supported by cast-in-place framing.

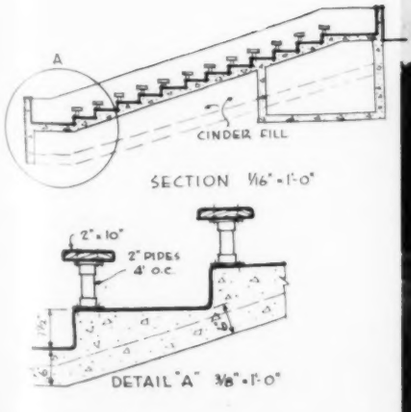
MORGAN PARK, NEW LONDON, CONN.: G. A. WATERS AND K. H. HOLMES, ENGINEERS





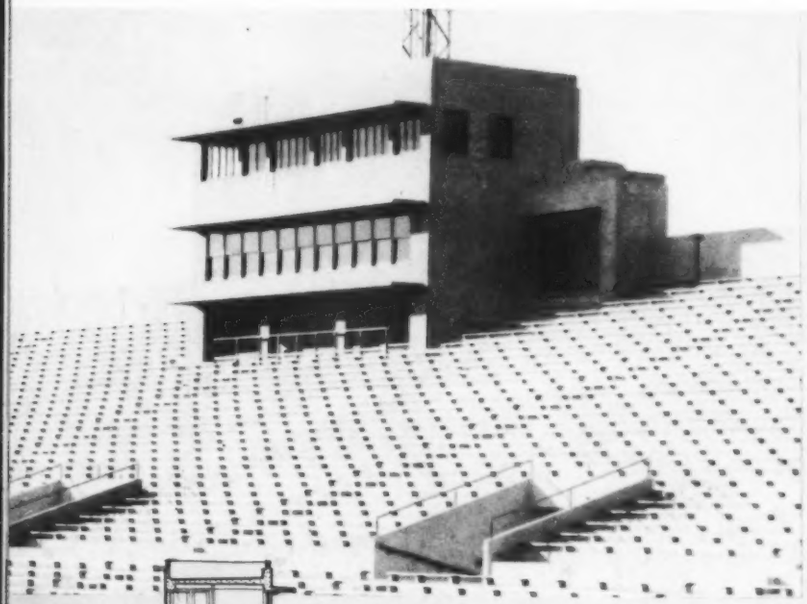
These baseball bleachers take advantage of grades and concentrate largest number of seats near home plate. When built of concrete, slab may be cast on embankment surface which is shaped either to step form or as a plane.

HAMPDEN ST. PLAYGROUND, HOLYOKE, MASS.: P. S. HOWES, ARCHITECT; P. E. BOND, ENGINEER



Also built to take advantage of natural slope, this structure has its principal spectators' entrance at top. Passage at right leads to dressing room beneath stand.

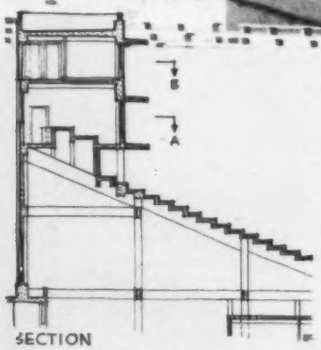
NYACK, NEW YORK: H. G. EMERY AND G. N. SCHOFIELD, ARCHITECTS; HARVEY POLHEMUS, ENGINEER



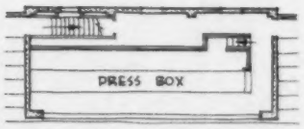
PRESSBOXES

DALLAS, TEXAS, HIGH SCHOOLS STADIUM: HOKE SMITH, ARCHITECT. This press and radio box accommodates 100 reporters and observers, has three broadcasting booths above, and the roof forms a platform for cameramen.

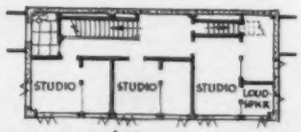
For football, these facilities should be centered on the 50-yd. line; for baseball, location near home plate is desirable. An elevation, such that reporters' view cannot be obstructed by a standing crowd, is required. Minimum facilities consist of a continuous desk, 1 ft. 6 in. wide, with an allowance of 2 linear ft. per man. If wire reports are to be sent out, each reporter (plus telegrapher) needs 4 linear ft. of desk. Telephone connections to scoreboard and players' bench, outside telephones, adequate artificial light, and some form of heating, are desirable. To prevent interference, cables for radio, telephone and power lines should be in separate conduits. Broadcasting booths 10 by 8 ft. (minimum) will accommodate technicians and equipment for large broadcasting systems. Small local stations may have fewer personnel and use smaller booths. Public address systems may be controlled from the pressbox or broadcasting booth.



SECTION

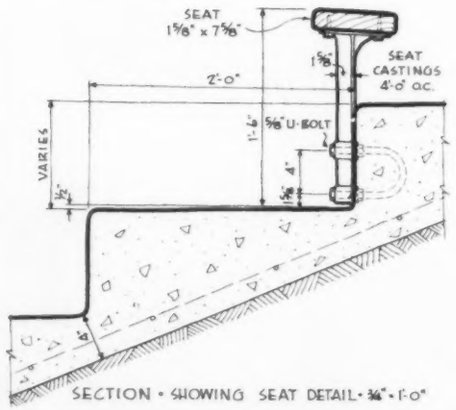


PLAN AT "A"



PLAN AT "B"

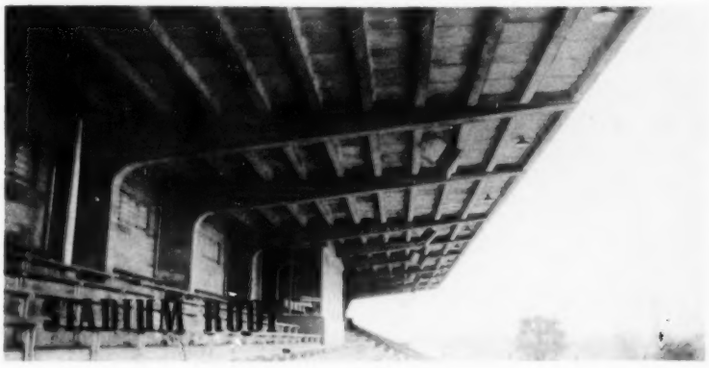
STADIUM SEATS



SECTION • SHOWING SEAT DETAIL • ¾" • 1'-0"

MITCHELL FIELD, HOLYOKE, MASS.: P. E. BOND, ENGINEER. Like most stadium seats, these are wood, supported on iron brackets. Woods most commonly used are Douglas fir, redwood, cypress, etc.; choice should be based on resistance to deterioration. Preservatives are desirable, as is painting, provided care is taken to prevent staining spectators' clothing. Seats made up of two or three pieces, preferably pitched to the back for comfort and drainage, have least tendency to warp.

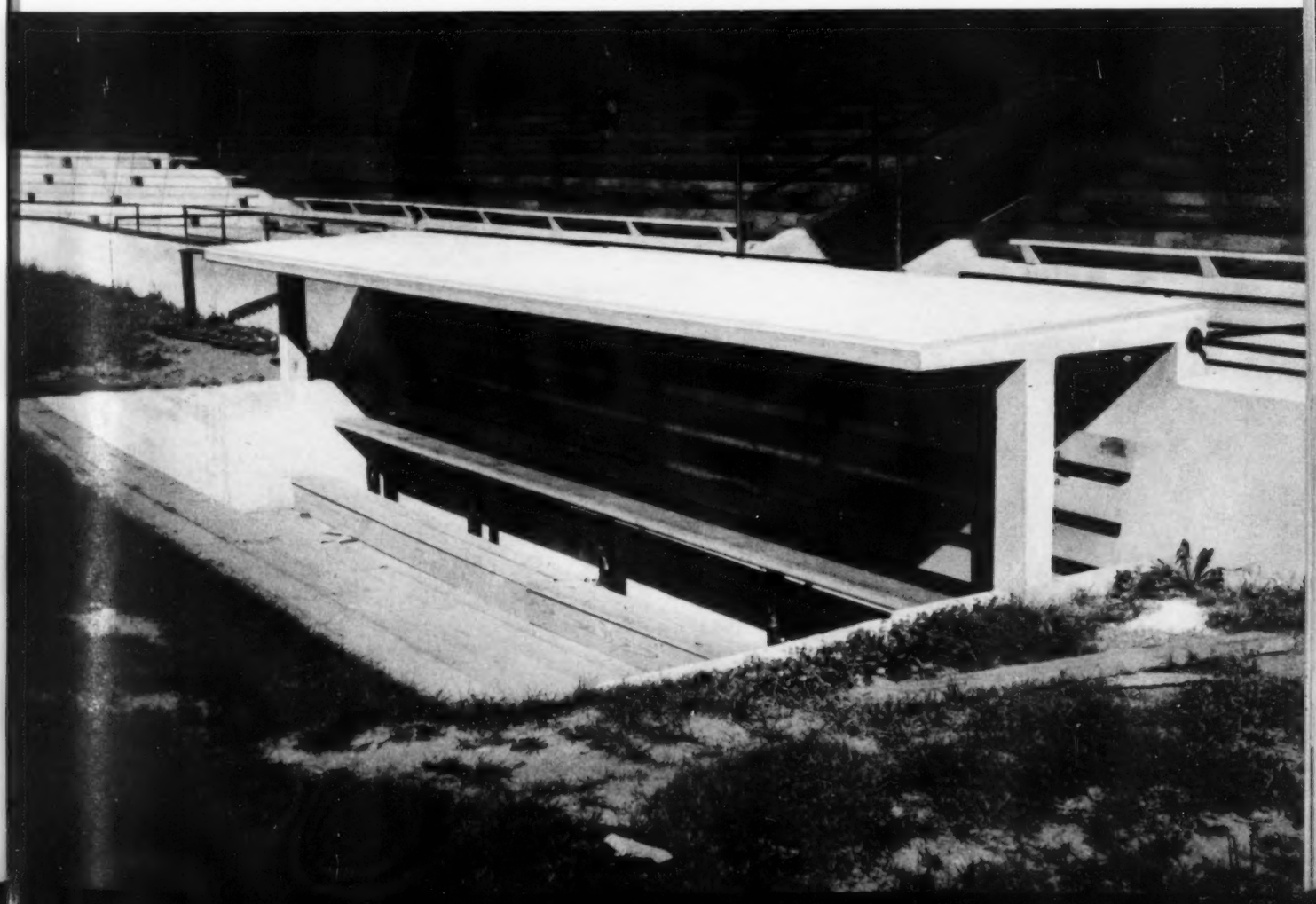
Preferable minimum depth of seat is 10 in., nominal thickness, usually 2 in. Supports are ordinarily 4 ft. on centers. Seats should not be continuous over expansion joints in the stand structure, unless the extension is not more than 4 ft., and unless the plank is not rigidly anchored to the end support.



STROBEL FIELD STADIUM, SANDUSKY, O.: HAROLD PARKER, ARCHITECT, R. C. REESE, ENGINEER. This type of cantilevered concrete roof offers protection to spectators and the press. In some cases, the pressbox is suspended from the front edge of the roof.

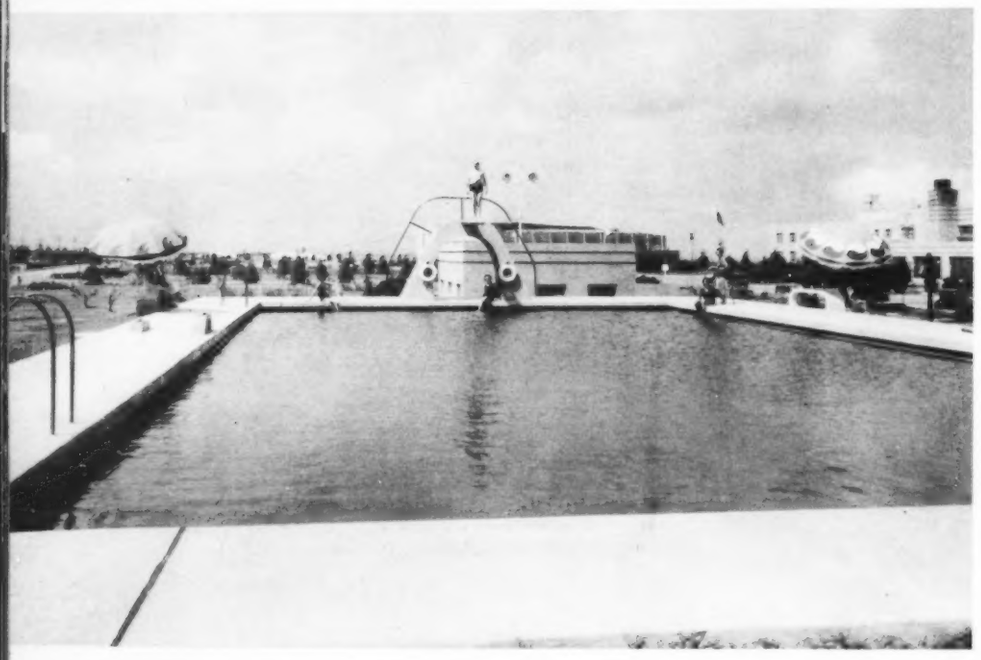
PLAYER'S DUGOUT

DUGOUT, MICHIGAN STATE NORMAL COLLEGE GRANDSTAND, YPSILANTI, MICH.: GIFFELS AND VALLET, INC., ARCHITECTS. Placing floor of dugout below grade reduces interference with spectators' view, and protects players from cold. Depth is determined by sightlines from grandstand, and by drainage problems. Besides seats, a drinking fountain (permanent or portable) and telephones to pressbox and scoreboard, are desirable.



PRIVATE

POOL dimensions are commonly smaller than formerly; this 60-ft. example on a Connecticut estate has an adjoining wading pool.*



PUBLIC

SHUSHAN AIRPORT SWIMMING POOL, NEW ORLEANS, LA.: E. E. ELAM, ENGINEER. This pool was designed primarily as a reservoir for the fire-protection system; as a swimming pool, it has value for revenue and as an advertising medium.

COMMERCIAL

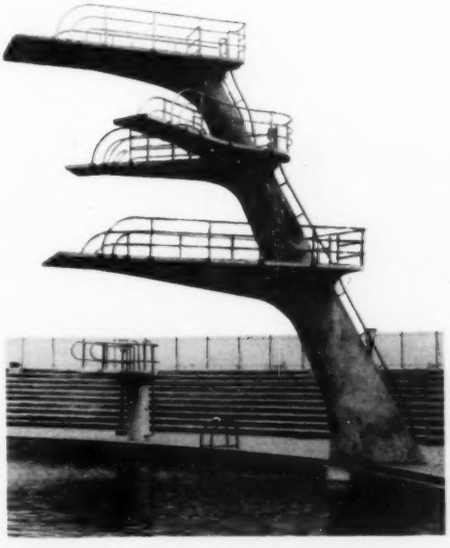
WASHINGTON PARK POOLS, CHICAGO, ILL.: CHICAGO PARK DISTRICT, DESIGNERS. Designed for both recreation and competition, this grandstand-equipped pool has diving and racing pools in the foreground. Barely visible under trees is segregated wading pool.

Photo courtesy Swimming Pool Constr. Co.

CLUB A 75-ft. pool is the usual accommodation today. Typical provisions include a bathhouse (see accompanying Time-Saver Standards) and lounges, terraces, etc.).

COMPLETE FACILITIES for swimming pools vary somewhat with the type of pool. For public pools, diving area, wading pool, bathhouse, spectator facilities and play area are desirable. Wading pools are considered necessary wherever small children are admitted. Bathhouses are discussed on the two following pages and in the accompanying Time-Saver Standards. Play areas and space for sun bathing increase a pool's popularity and can, in effect, increase a pool's capacity by keeping people busy out of the water.

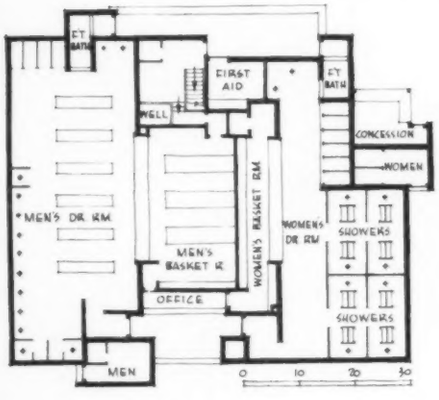
Size of pool may be predicated upon estimated attendance. For private and club pools this is relatively simple; for public pools, criteria are difficult to set up. Studies by Iowa State College indicate that for cities under 30,000 population, max. daily attendance is from 5 to 10%. Another rule estimates average daily attendance at from 2 to 3%; with maximum daily attendance about 2 to 6 times the average; and maximum attendance at any one time, about ⅓ total daily attendance. Pool capacity allowances are based on the assumption that water 5 ft. or more deep is "swimming" area; less depth is used for "bathing"; for swimming, allow 27 sq. ft. per person; for bathing, 10 sq. ft. Another method of computing areas allows each bather 20 sq. ft. including pool, walks, and play area. Local and state health regulations should be consulted.



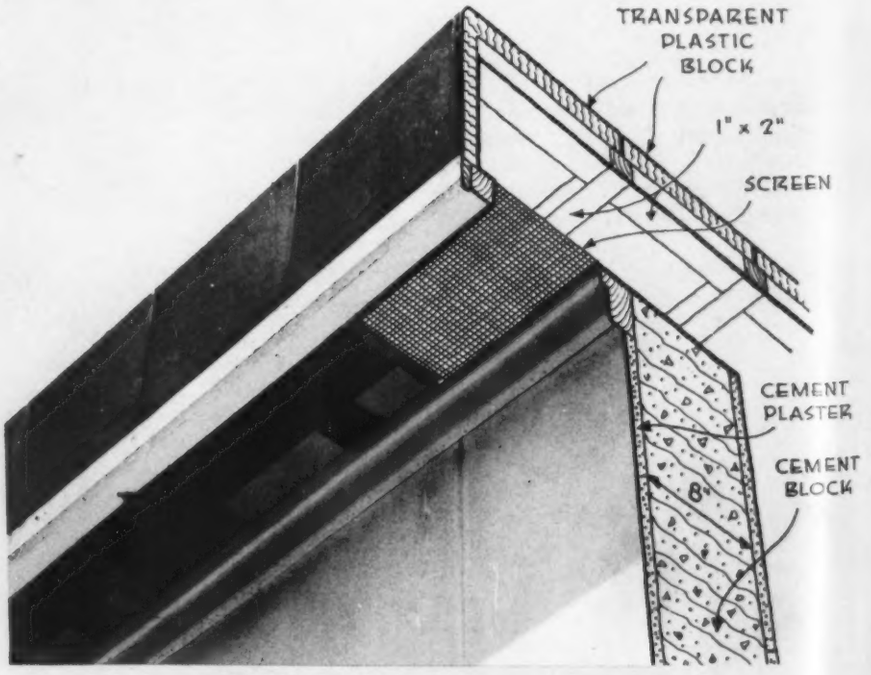
DIVING TOWER, ASTORIA SWIMMING POOL, NEW YORK CITY: DEPARTMENT OF PARKS, DESIGNERS. This structure, in reinforced concrete, an example of design for function.

BATHHOUSES

Photos by Elmer L. Astleford

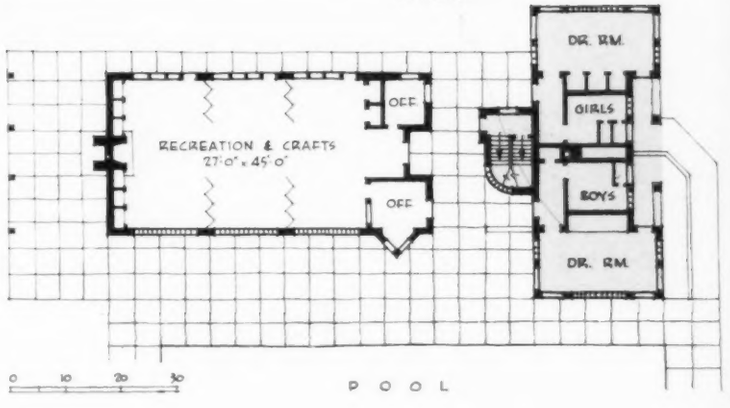


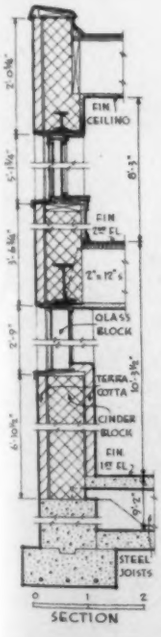
MUNICIPAL BATHHOUSE, MIDLAND, MICH.: ALDEN B. DOW, ARCHITECT. Chief problem in this type of structure is maintenance of privacy without reducing necessarily high standards of sanitation. Also important are segregation of bathers by sex, separation of "wet" bathers from "dry," efficient yet unobtrusive supervision of dressing rooms, and provision for controlling incoming and outgoing patrons. Here the architect provided ample interior light by means of translucent plastic eaves-coverings, and permitted adequate ventilation by leaving open the eaves-soffit. Bathhouse also contains sterilizing equipment for pool; this is located in a half-basement. The resulting raised floor of the checking area aids supervision of dressing space. In pool photo, note deep-water area in center, protected by a low rail. Diving tower with elevated seat for lifeguard is located so all patrons and spectators can see and be seen.



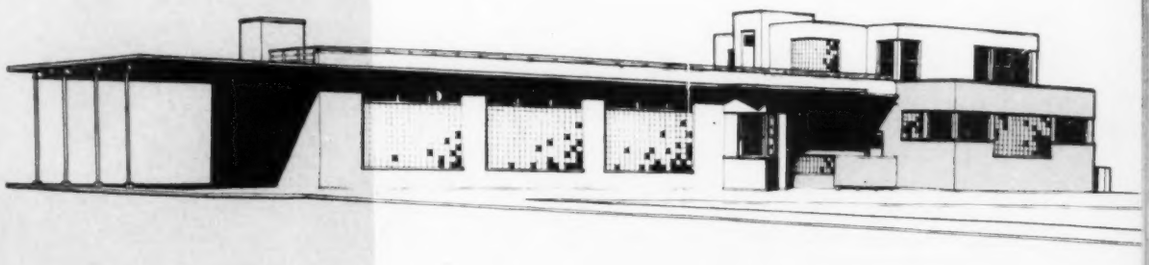
Paul Bricl

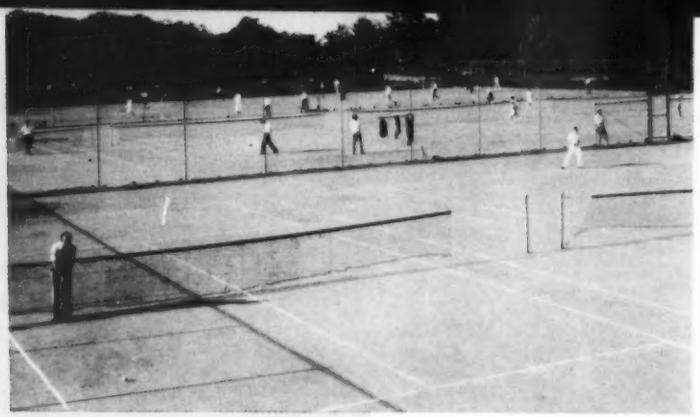
SHELTER HOUSES, CINCINNATI, O.: GARRIOTT AND BECKER, ARCHITECTS. Ten identical structures have been constructed for Cincinnati's Recreation Commission. Each center will ultimately contain a large recreation room; indoor and outdoor fireplaces; space for dancing; and caretaker's apartment. Each present bathhouse unit contains toilets for completed unit. Light is admitted through glass blocks, air through louvers. This kind of building is subject to ruthless vandalism, particularly in "tough" neighborhoods. So breakable materials and equipment are omitted or replaced with unbreakable; surfaces of walls are ceramic glazed to discourage scribblers; "dirt-catchers" are eliminated.





EACH OF THE TEN shelter houses adjoins a city-maintained pool. One problem lay in devising a single plan suitable for all ten locations.





Ewing Galloway

AN AMERICAN DEVELOPMENT: RECREATION CENTERS

IN THE CITY, or wherever large audiences are available, commercialized sports have their definite place. There remain, as typically urban problems, the need for outdoor play areas, particularly for children; the need for passive forms of outdoor recreation in which people can participate—such as parks—and the need for buildings to house games, hobbies, and social gatherings.

In rural districts, the first two needs—space for outdoor play and passive outdoor recreation — may be filled by nature. But the community of interest which develops around organized team play, and from pursuit of avocations, social functions, etc., demands formal facilities like those needed in cities. The importance of these activities is attested to by the great number of community facilities provided by schools, churches, and municipalities.

OUTDOOR AREAS. The report of a special committee of the National Recreation Association* on standards of outdoor recreation areas in housing developments follows substantially recommendations previously published in Architectural Record.† Three types of spaces, for varying age-groups, are considered desirable: *Playlots*, small in size, for preschool children; *playgrounds*, larger in area, for older children; and *playfields* for young people and adults, with accommodations for organized games.

RECREATION BUILDINGS. Requirements naturally vary according to local needs. The following are considered desirable features in a community recreation building:**

- **★ Gymnasium with locker, shower, and dressing room facilities**
- **★ Auditorium with stage**
- **★ Rooms for games, club activities, arts and crafts**
- **★ Kitchen**
- **★ Lobby, lounge and office**
- **★ Toilets, checking and heating facilities, fuel and storage rooms, janitors' or caretaker's facilities.**

Gymnasium space 50 by 90 ft., with minimum ceiling height of 20 ft., is desirable. Lockers, dressing rooms, etc., need not be planned for full capacity use, as in schools, but rather in proportion to the approximate average use.

Auditorium, if used for a variety of purposes including dancing, should have a level floor; sloping floors are suitable only when permanent theater seating is to be installed. Stage should be permanent and elevated. Depending on community interest in dramatics, expensive equipment such as fly galleries and elaborate lighting facilities may be held to a minimum. Experiments in semi-portable stage construction, with the front portion of the stage consisting of uniform removable sections which can be regrouped (as runways for fashion shows, etc.), are now in progress.

At least two rooms, usually more, are devoted to arts and crafts (similar to school industrial art provisions), to club meeting rooms, exhibitions, etc.

Skating rinks are sometimes included, outdoors or indoors; often swimming pools are designed for winter conversion for skating. Recreation centers such as those in Cincinnati, illustrated in this issue, are adaptable to this purpose.

ULINE SKATING RINK, Washington, D. C.: J. H. Lapish, Architect

* *"Play Space in New Neighborhoods"*; 25¢, National Recreation Assn., 315 4th Ave., N. Y. C.

† *"Low-Rent Housing"*; A Building Types Study, Arch. Record, March, 1939.

** *"Planning a Community Recreation Building,"* by F. Ellwood Allen, consultant; 20¢, National Recreation Assn. See also *"Community Theaters"*; A Building Types Study, Arch. Record, October, 1939.

BATH HOUSE DESIGN

ARCHITECTURAL RECORD
TIME-SAVER STANDARDS
APRIL 1941

Information on this sheet was prepared by Ronald Allwork from data assembled by the Portland Cement Association; Joint Committee on Bathing Places, American Public Health Ass'n.; Conference of State Sanitary Engineers.

General. Capacity and operation of the bathhouse must be such as to avoid overcrowding at times of maximum demand; however, it is better to have an overcrowded condition a few times a year rather than to have facilities so large as to be uneconomical.

Location of bathhouse depends partly on size of pool and space available. When possible, bathhouse should be placed so as to protect pool from prevailing winds. A location at one side of the pool, or better still, at the shallow end, will reduce the danger of poor swimmers and children falling or jumping into deep water.

Size of bathhouse and selection of equipment, in relation to pool size, depend on such factors as the need for: lockers, or central checking system; individual dressing rooms, or the "dormitory" system; private or group showers; and extra facilities. If patrons are permitted to use their own suits, some will come ready to swim, and dressing and check rooms may be small. But since all bathers should be required to take a cleansing shower, the number of showers needed will remain the same.

Area of bathhouse is usually 1/3 of pool area; area of dressing room approximates 1/5 pool area. It is recommended that bathhouse facilities, based on the number of bathers present at any one time (2/3 of whom may be assumed to be men), be provided as follows:

1 shower for each 40 bathers
1 lavatory for each 60 bathers
1 toilet for each 40 women
1 toilet for each 60 men
1 urinal for each 60 men

For rough estimate of maximum number of persons within a pool enclosure (pool and walks) assume one person for every 12 sq. ft. of pool area. Hence for a pool 30 x 75 ft., assume 190 persons.

Elements of a bathhouse vary with local requirements, but usually include: entrance lobby, ticket or cashier's booth, concessions, manager's office, public telephones, checking room, suit and towel room, dressing rooms, toilets, showers, first aid room, guard's or attendant's room, mechanical equipment, storage space, etc.

Dressing rooms. Method of checking clothes must be decided before the layout can be determined, as the method chosen affects the entire arrangement. Both individual lockers and central check rooms have been used successfully. Choice depends mainly on local conditions. A combination of the two systems may become the most desirable, since obviously requirements for a well-dressed adult and for a boy in play clothes are not the same. Lockers should be placed on a raised platform to keep them dry and to simplify floor cleaning. Lockers require most space, but tend to keep clothes in better condition. Individual dressing rooms must usually be provided for women and girls, whereas men and boys ordinarily dress in aisles between rows of lockers. A few individual dressing rooms are sometimes provided in men's dressing rooms.

Regardless of the system adopted, dressing and locker rooms should be arranged to admit a maximum of sunlight and air in order to maintain clean, sanitary conditions. Satisfactory results have been obtained from the "open-court" type, in which the roof is omitted over part of the dressing room area.

Toilets of the wall-hung type are recommended.

Showers may be either individual or group-controlled; some type of control, which eliminates any possibility of bathers being scalded, is essential.

There are many types of bathhouse equipment on the market which add to the convenience of the patrons and increase the popularity of the pool. Hair driers, comb-vending machines, exercisers and scales are frequently installed.

Planning of bathhouse elements should be such as to permit operation with minimum of personnel, particularly during slack periods.

Circulation. Arrange all facilities so patrons can pass through quickly, without confusion. The only route from dressing room to pool should be past toilets and shower rooms. Each bather should be required to take a thorough cleansing shower with soap before putting on bathing suit. By requiring each bather to pass through a group of showers before entering the pool a superficial bath will be obtained, but this must not be considered as replacing the required shower in the nude.

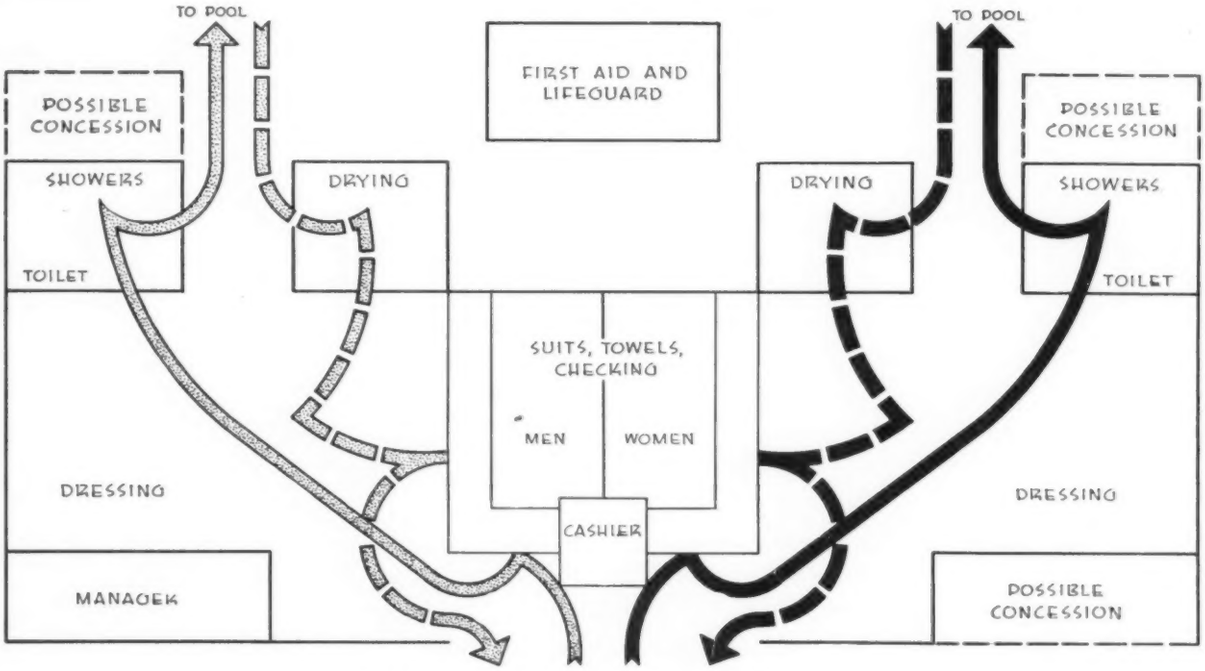
Toilets should be accessible directly from both dressing room and pool. Separate ones for "wet" and "dry" bathers are desirable. Disinfecting foot baths should be placed between pool and toilet.

Bathers returning from the pool should preferably pass through a separate drying room to the dressing room, and the "wet" and "dry" bathers should be separated as much as practical. Exit from bathhouse to street should be so arranged that an attendant may collect all keys, checks, suits or other supplies belonging to the establishment.

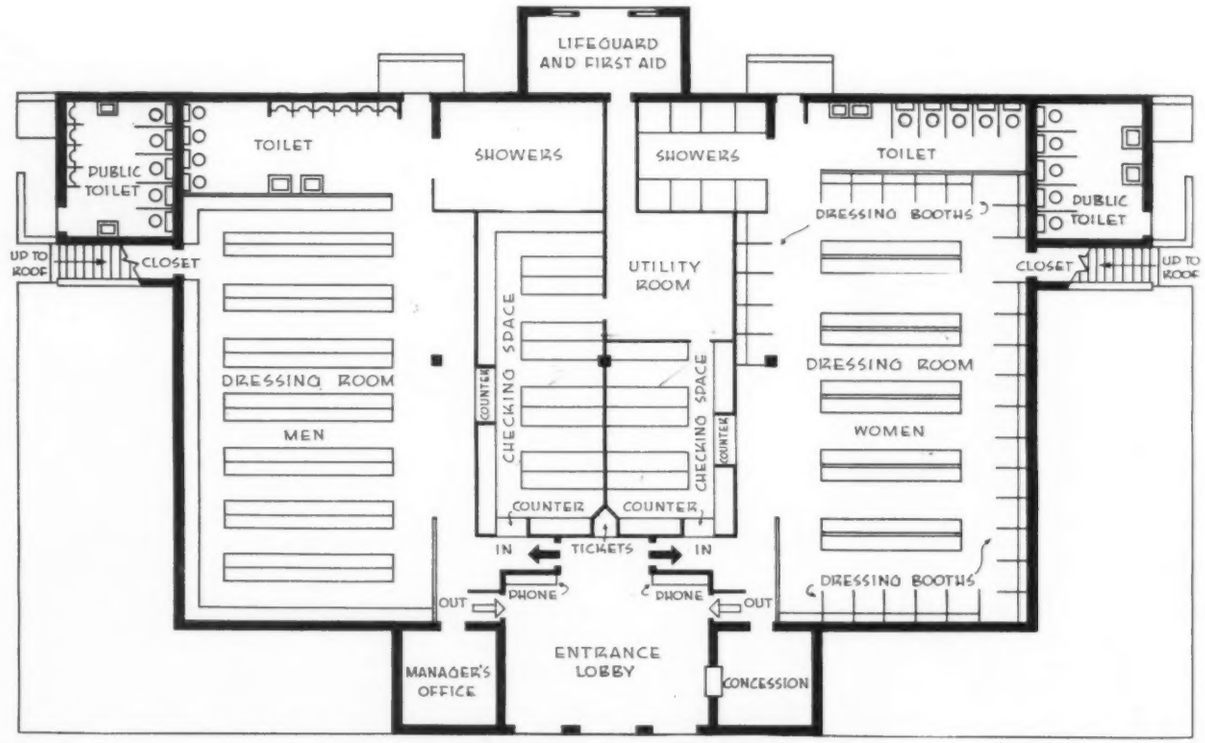
Construction. Resistance to deterioration and fire is especially important. The constant dampness which usually prevails is harmful to many materials and causes rapid deterioration. Therefore materials which are entirely satisfactory in ordinary buildings may not be desirable for bathhouses. Fire hazard must also be considered in selection of materials, particularly since the building is generally in an isolated location and without attendants a good portion of the year.

Bathhouses must be kept scrupulously clean by frequent washing. Construction should be such that washing with high pressure hose will not damage the building. Floors of bathhouses should be pitched 1/4" per ft. to frequent outlets to assure rapid drainage. Provide an ample number of hose connections to make cleaning easy. Connection should be not less than 1 in. to insure adequate water volume and pressure.

BATH HOUSE DESIGN



BATHHOUSE CIRCULATION



SCALE 1/16"=1'-0"

PLAN OF TYPICAL BATHHOUSE FOR 750 PERSON POOL

ARCHITECTURAL RECORD
TIME-SAVER STANDARDS
APRIL 1941

STADIA: SEATING DESIGN—1

Information on this sheet was prepared by Ronald Allwork from data assembled by the Portland Cement Ass'n.; Gavin Hadden; A. B. Randall; E. S. Crawley. It is intended to furnish a basis for designing outdoor seating for grandstands, arenas, bowls, theatres, bleachers, etc.

General. The purpose of a grandstand is to provide an audience with a good view of a performance under comfortable circumstances. The view is affected by both the distance to the action and obstructions in the line of sight. Shape and relation of grandstand to action is generally determined by type of performance.

Sight lines. Best view is obtained when the sight line to any part of the field of action clears the heads of the spectators in front. Since this is not always practicable, only sight lines normal to the grandstand are ordinarily considered; oblique lines to different parts of the field are neglected. However, compensation is sometimes made (particularly in bowls) by curving the stands so normal lines approach the center of action.

The focal point—intersection of sight line with playing field—varies according to the type of action. For football, it may be the nearest line of the playing field; for track, at about chest height of the runner in the nearest lane; for baseball, the catcher.

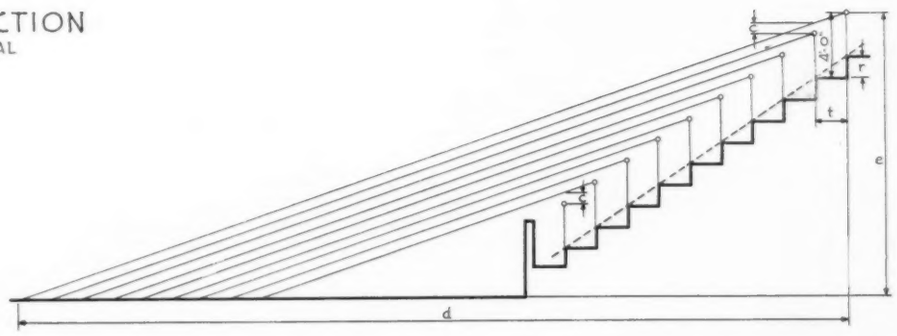
The approximate eye level of a seated spectator is assumed to be 4 ft. above the floor and 6 in. below the top of his hat. Referring to diagrams below, it will be observed that, with focal point and elevation for first row of seats established, required elevation for higher seats is materially affected by the assumed value of c. With a value of 6 in. given to c, an unobstructed view may be assumed, but except for small grandstands, this dimension often results in excessively high rear seats. It is therefore common practice to assign a smaller value to c, especially in large grandstands. It is assumed that spectators will have a satisfactory view if they can see over the heads of those in the second row ahead of them. This requires a value of 3 in. for c.

Diagrams below illustrate two types of sections; the second shows a curved seat section with a common focal point, and the first, a straight seat section with a different focal point for each seat. In the straight section, lower seats have better visibility, and upper seats poorer visibility, than in the curved section, but the average is the same.

STRAIGHT SEAT SECTION

PROVIDES A DIFFERENT FOCAL POINT FOR EACH SEAT

NOTE - SINCE ALL RISERS ARE EQUAL IN HEIGHT, THEIR TOP EDGES FORM A STRAIGHT LINE

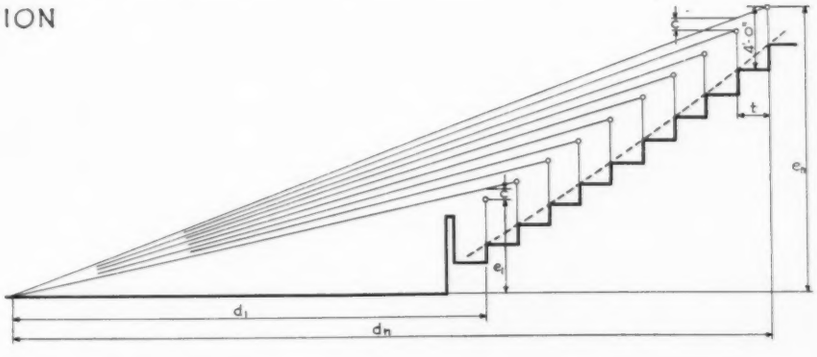


NOTE - THE ELEVATION OF FRONT AND REAR SEATS, AND THE SIGHT LINE CLEARANCE, ARE THE SAME FOR BOTH DIAGRAMS. NEITHER DIAGRAM IS DRAWN TO SCALE.

CURVED SEAT SECTION

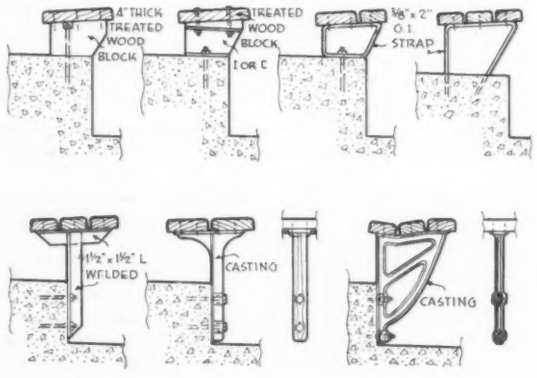
PROVIDES A COMMON FOCAL POINT FOR EACH SEAT.

NOTE - SINCE EACH RISER IS GREATER THAN THE ONE BELOW IT, THEIR TOP EDGES FORM A CURVED LINE.



STADIA: SEATING DESIGN—1

$\frac{d}{l}$	S	$\frac{d}{l}$	S	$\frac{d}{l}$	S
1	0.0000	36	4.1468	71	4.8328
2	1.0000	37	4.1746	72	4.8469
3	1.5000	38	4.2016	73	4.8608
4	1.8333	39	4.2279	74	4.8745
5	2.0833	40	4.2535	75	4.8880
6	2.2833	41	4.2785	76	4.9014
7	2.4500	42	4.3029	77	4.9145
8	2.5929	43	4.3267	78	4.9275
9	2.7179	44	4.3500	79	4.9403
10	2.8290	45	4.3727	80	4.9530
11	2.9290	46	4.3949	81	4.9655
12	3.0199	47	4.4167	82	4.9778
13	3.1032	48	4.4380	83	4.9900
14	3.1801	49	4.4588	84	5.0021
15	3.2516	50	4.4792	85	5.0140
16	3.3182	51	4.4992	86	5.0257
17	3.3807	52	4.5188	87	5.0374
18	3.4396	53	4.5380	88	5.0489
19	3.4951	54	4.5569	89	5.0602
20	3.5477	55	4.5754	90	5.0715
21	3.5977	56	4.5936	91	5.0826
22	3.6454	57	4.6115	92	5.0936
23	3.6908	58	4.6290	93	5.1044
24	3.7343	59	4.6463	94	5.1152
25	3.7760	60	4.6632	95	5.1258
26	3.8160	61	4.6799	96	5.1363
27	3.8544	62	4.6963	97	5.1468
28	3.8915	63	4.7124	98	5.1571
29	3.9272	64	4.7283	99	5.1673
30	3.9617	65	4.7439	100	5.1774
31	3.9950	66	4.7593	101	5.1874
32	4.0272	67	4.7744	102	5.1973
33	4.0585	68	4.7894	103	5.2071
34	4.0888	69	4.8041	104	5.2168
35	4.1182	70	4.8186	105	5.2264



TYPICAL SEATS AND SEAT SUPPORTS

SCALE ½" = 1'-0"

NOTE – DETAILS SHOWN ABOVE ARE IN COMMON USE BUT MANY OTHER DESIGNS ARE EQUALLY AS ACCEPTABLE. THE FIRST TWO UPPER LEFT DETAILS ARE APPLICABLE ONLY TO RELATIVELY HIGH RISERS

Straight section need be checked for sight lines from top seats only, as these have the poorest view. In this case, the relation between horizontal distance from seat to focal point d, height of eye above focal point e, width of tread t, height of riser r, and clearance c is represented by the formula:

$$\frac{d}{c} = \frac{t}{r - c}$$

Curved section. Relation of the various factors is represented by the formula:

$$e_n = d_n \left[\frac{e_1}{d_1} + \frac{c}{t} (S_n - S_1) \right]$$

in which e_n = *elevation above focal point of eye of spectator in row n.*
e_1 = *elevation above focal point of eye of spectator in row 1.*
d_n = *distance from focal point to row n.*
c = *clearance between successive sight lines.*
t = *width of tread.*
S_1 *and* S_n = *values from table corresponding to* $\frac{d_1}{t}$ *and* $\frac{d_n}{t}$.

For simplicity the value of d_1 should be an exact multiple of t. As an example of the use of this formula, assume that it is desired to design a grandstand with a common focal point. Assume the factors:

$$e_1 = 6 \text{ ft.}, \; d_1 = 32 \text{ ft.}, \; c = 0.25 \text{ ft.}, \; t = 2 \text{ ft.}$$

Then the formula becomes

$$e_n = d_n \left[\frac{6}{32} + \frac{0.25}{2} (S_n - 3.3182) \right]$$

which can be simplified to

$$e_n = d_n (0.125 S_n - 0.2273)$$

for these specific conditions. For the last row

$$d_n = 78; \quad \frac{d_n}{t} = 39;$$

from the table,

$$S_n = 4.2279;$$

and the formula gives

$$e_n = 23.49\frac{1}{2}$$

which is the distance above the focal point of eye of spectator in the last row. Elevation of tread for this spectator is thus $23.49 - 4.0 = 19.49$ ft. The elevation of each row is obtained similarly. To provide this curved seating section requires that each riser be slightly higher than the preceding one. Few grandstands have been built to the theoretical curve but a number have been constructed with a series of straight sections which approximate the theoretical curve. This is obtained by increasing the height of riser for succeeding groups of 5 to 10 rows rather than for each row. This greatly reduces the construction difficulties involved in the use of variable riser heights. Such a plan is recommended for structures containing more than about 25 rows of seats and may be used in smaller structures.

Treads and risers for grandstand seats should be as small as possible for economy but sufficient for comfort and good view. Width of treads may be from 24 to 30 in. Width of 26 in. provides reasonable comfort and is probably satisfactory for average cases. When seats with fixed backs are used, tread should be at least 30 in. Where there is much movement of spectators during the program, as at race tracks, wider treads are required than when spectators remain in their seats. First tread should be wide enough to provide 18 in. between front edge of seat and wall or rail. Distance between back of last seat and rear wall need not be more than 6 in. unless a transverse aisle is provided here. Riser heights may vary from 6 to 18 in. Risers in small stands usually are from 9 to 14 in.

Seats. Space allowed for each seat, lengthwise in the row, is generally between 17 and 18½ in. Width of seats may be varied slightly to provide for varying lengths of rows caused by entrance-ways, aisles, etc. Height of seat from floor should be approximately 18 in.

"They TAKE THE HARD KNOCKS the public gives them"

— says Mr. Arthur B. Bonner

● At the left is the Watrous Majestic diaphragm type Flush Valve and at the right the Watrous Imperial piston type valve.

...at Santa Anita

one of the richest and most beautiful racing tracks in America, Mr. Arthur B. Bonner, who has charge of the plumbing, reports that more than 300 Watrous Flush Valves take all the punishment the public can give them. With crowds of from 50,000 to 100,000 pouring through the turnstiles every day during the season, the Watrous Flush Valves get a real workout.

"After the experience I have had with these valves," states Mr. Bonner, "I would not exchange them for any other. They take all the hard knocks the public gives them. We have no trouble with them and after over five years they look like they will last a life time."

...at Griffith Stadium

in Washington, where the American League Senators play, Watrous Flush Valves are also showing the service that is so typical of these valves under hard usage. Mr. J. R. Ritchie, in reporting on these valves, says:

"To date we have never replaced any part of our Watrous Flush Valves and we have never had a clogged by-pass. Our valves are No. M-532 Majestic with M-1111 Vacuum Breaker. Our experience with Watrous Flush Valves has been very satisfactory."

READ the typical statements at left, about Watrous Flush Valve performance and you will understand why these valves are being used in recreational structures such as race tracks, ball parks, playgrounds, stadia and similar spots. It's in all such places that flush valves really have to "stand up and take it".

Here are two of the reasons why, in all classes of service, Watrous Flush Valves:

1. SAVE WATER. A simple adjustment makes it possible to regulate any Watrous valve so minimum amount of water will be used for each fixture. This ordinarily saves 1 to 2 gallons per flush—as much as a dollar per valve per year in water bills.

2. ELIMINATE MAINTENANCE TROUBLES. By-pass has patented, mechanically operated self-cleansing device which prevents clogging—keeps valve working properly.

And if silent operation is desirable, you can specify the remarkable Watrous SILENT-ACTION Flush Valve at very little increase in cost.

On your next job be sure to specify and install Watrous.

THE IMPERIAL BRASS MFG. CO.

1240 West Harrison Street ● Chicago, Illinois

Watrous Flush Valves

THEY PAY FOR THEMSELVES IN THE WATER THEY SAVE

NEWS OF MATERIALS AND EQUIPMENT

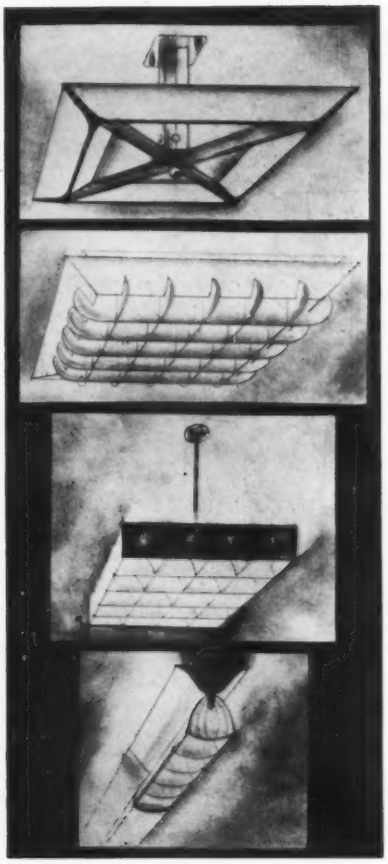


Figure 1

Three-Foot Fluorescent

DEVELOPMENT of a new 36-in. Mazda fluorescent lamp, rated at 65 watts and available in 3500-degree white and daylight, has been announced. Luminaires employing six of these lamps will, according to the engineers, provide commercial fixtures of good proportion and appearance, and when installed on recommended fixture spacing will also supply a quantity of light suitable for meeting modern illuminating requirements. The new lamp should make possible an increased flexibility in luminaire designs calling for use of large diameter fluorescent lamps. Application will be largely in commercial fields, hotels, restaurants, theaters, clubs and as a supplementary light source in various industrial operations. General Electric Co., Nela Park, Cleveland, Ohio. (See figure 1.)

Corrosion-Resistant Plastic Coating

AFTER SEVERAL YEARS of development and more or less experimental installations, a sprayable plastic base coating, said to be corrosion-proof and non-contaminating, is now being made generally available. Applied to steel and concrete, it forms, according to the manufacturer, a tough, impermeable finish that withstands considerable abrasion and does not check, crack or fracture when submitted to vibration and moderate expansion and contraction. The coating is said to be odorless, tasteless, resistant to acids, alkalis, oils and fats, insoluble in alcohol—all of which adapts it to use in such industries as bottling, fishing, film products, petroleum, dairy, brewery, bleaching, wine production, etc. American Concrete and Steel Pipe Co., Box 3428 Terminal Annex Post Office, Los Angeles, Calif.

Quiet-Operating Cabinet Heater

A NEW "QUIET-OPERATING" cabinet unit for steam or hot water heating systems is announced, suitable for offices, lobbies, stores, show-rooms, corridors, etc. The silencing is accomplished by rubber mounting of motor and blower, acoustical mastic applied to the interior, and low air velocities made possible by a large-area heating coil. The cabinet is well styled, and the design provides for concealment of piping, valves and traps. Bonderizing has been employed before painting. For 105, 310 and 450 sq. ft. of steam radiation. Five types—Floor, Wall, Recessed, Inverted Wall and Ceiling Cabinets. Modine Manufacturing Company, Racine, Wis.

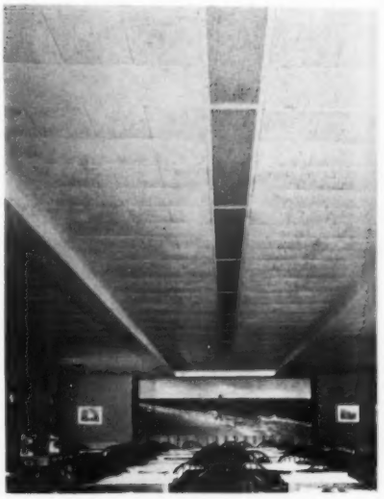


Figure 2

Dry Ceiling System

RELATIVELY NEW is a dry ceiling system consisting of pre-formed 24-gauge flat steel panels 12 in. wide, said to perform the functions of metal lath and plaster ceiling at comparable cost, with the advantages of dry construction, speed, cleanliness, non-interference with other trades. These ceilings may be attached directly to floor slabs, beams, joists, etc., or suspended below them. Anchors, hangers, furring, moldings are furnished and installed as integral parts. The ceiling provides access to the space above at any point, making this space available for all service ducts, pipe and conduits. The parts of the structure are hot-dipped galvanized and the exposed surfaces bonderized and prime-coated at the factory. The designer advocates perforation of some of the panels where desirable, so that the space above may be used as a plenum for air distribution, eliminating ducts. Fluorescent fixtures are available as integral units, and several types of acoustic materials are said to be applicable. William I. Lucius, 522 W. 45th St., New York City. (See figure 2.)

(*Continued on page 108*)

"WHAT DID HE SAY TO THE BAD MAN, MOTHER?"

LITTLE Willie is paying strict attention. But the theater showing the thriller was built for silent films—not "talkies." Jumbled sounds, plus Willie's questions, are far from pleasing to the patrons—and there are getting to be more and more empty seats to worry the manager.

Acoustical correction with Armstrong's Corkoustic would bring this theater right up to date. Business would go up again!

For Armstrong's Corkoustic eliminates excess reverberation and disturbing "echo"—lets sound reach the far corners of the balcony, clearly and audibly.

This cork material is easily washed or vacuum-cleaned. It can even be repainted (when necessary) without affecting its sound-controlling efficiency. Corkoustic makes decoration easy, too. The attractive pastel colorings blend with any interior plan.

Corkoustic is also a good insulator against extremes of heat and cold, keeping rooms at a more even temperature, summer and winter, and helping to save fuel, too.

Get all the facts about this modern acoustical material. See "Sweet's," or write for free copy of the informative booklet, "Tune Out Noise." Armstrong Cork Co., Building Materials Division, 1245 State St., Lancaster, Pa.

Armstrong's Temcoustic and Corkoustic

ARCHITECTURE

☆ **A review of the spirited contributions to this department makes it quite evident that architects not only read advertising, but are pretty much in accord as to what it ought to do for them.**

Good advertising, they feel, "talks the language" not alone by mere familiarity with technical phraseology—it exhibits a genuine understanding of the architect's mode of thinking and way of doing things.

The architect who is brought face to face with a particular product, either consciously or through sheer habit seeks the answer to certain fundamental questions. For the manufacturer they might be summed up in the following manner—though not necessarily in the same order.

PERFORMANCE: What does the product do and how long will it do it? Remember that the architect's job is one of coordinating many materials and kinds of equipment into a homogeneous unit. All should team up and work together, and give, insofar as possible, the same length of service.

APPLICATION: When and how is the product used? This question is of particular interest to the technical reader. And, because the architect reads the graphic illustration better than the word, this question is usually best answered by a photograph or drawing.

APPEARANCE: What does it look like; what is its shape, color or texture? Even if it doesn't affect the looks of the structure, a photograph may offer a better description of its qualities than words could ever hope to.

COST: There's the rub! It's the architect's bugaboo as well as the manufacturer's. Advertising must keep recommendations within reasonable limits—gold nails are not for the bungalow.

That manufacturers are grateful for such constructive criticism goes without saying, and it is certain that as architects and advertisers become more vocal in the discussion of their mutual problems, better service and better buildings will result.

—RONALD ALLWORK

WHY NOT SAY IT?

A constructive suggestion or a pet hate; whatever you'd like to say about advertising in architectural magazines we'll be glad to print. Just keep within 200 words, and, for lack of space, we must reserve the right to omit portions or withhold publication. Letters for May should be received by April 24.

?

TALMAGE C. HUGHES, A.I.A.

"Doing a fine job . . ."

I can't go along with those who believe present advertising in our professional journals is all wrong. To me it represents the finest that can be done by the combined efforts of advertiser and advertising agency.

To those who would revolutionize it I would say, "Show me." I have always believed in the specially trained person; the architect for an architectural problem, the advertising agency to prepare advertising copy. That's what is being done now and I think they are doing a fine job. Everyone knows we have the finest architectural magazines in the world, and advertising is on the highest plane, prepared by the best talent.

I wouldn't like to undertake the job of showing them how to do it, and I dare say the advertising people wouldn't make a very creditable showing at architecture.

MORRIS LAPIDUS

"To keep up with new features . . ."

The prime purposes of advertising in architectural magazines, as I see it, are: firstly, to keep before the architect's eye well-known materials and appliances and, secondly, to introduce to the architect newer materials and new and improved appliances. I know that I, for one, go through the advertising to refresh my memory and to keep up with all new features. I do not use the advertising pages as a technical file since I know that all technical data and information can be obtained from Sweet's Catalog File or by applying directly to the manufacturer.

If there were to be a "don't" for the advertisers, I would say: "Don't load the advertisement full of sales talk and technical data." The archi-

MEETS ADVERTISING

. . . and practicing architects air their views on the type of advertising that will be most useful to them

tect, by training, knows what to look for and the product does not need a long, verbose sales talk which might apply to a layman without any technical background. I, for one, do not read the average, lengthy, descriptive matter in an advertisement.

To my mind, a good advertisement names the product; if possible, shows the product, preferably in a complete installation; and in a few terse statements tells what it is and what its benefits are.

If all advertising were presented in this manner, it would be possible to skim through the advertising pages in a very short time and keep well posted on all old and new materials and appliances.

ELDREDGE SNYDER, A.I.A.

"Clear, concise and compelling . . ."

In general, I find advertising useful and interesting. The best advertisements, in my opinion, are those which impress me the most and they are the clear, concise and compelling ones that instantly and simultaneously catch my eye and mind. I am not attracted by long wordy copy nor illustrations that do not picture directly the product or the employment of the product. I am secondarily interested in knowing that a product, new to me, has been used successfully in an outstanding building or by outstanding architects. In short, and obviously, to be successful, architectural advertising should appeal to the architect—he wants to know and he has not much time.

JAMES A. SPENCE, A.I.A.

"Most convenient way to keep informed . . ."

Frankly, I consider the advertising of just as much importance as the editorial portion. Especially in this era of changing conditions with new materials being brought on the market almost daily, it is imperative that the architect keep himself well informed on new methods and materials. The most convenient way to keep so informed is by reading the announcements such as appear in the RECORD. To be of most value to the architect, these announcements of new materials should be specific and concise and not in the nature of a general advertising broadside. In general, I think that advertising is well presented, but there is still a lot of "ballyhoo" offered which we could well get along without.

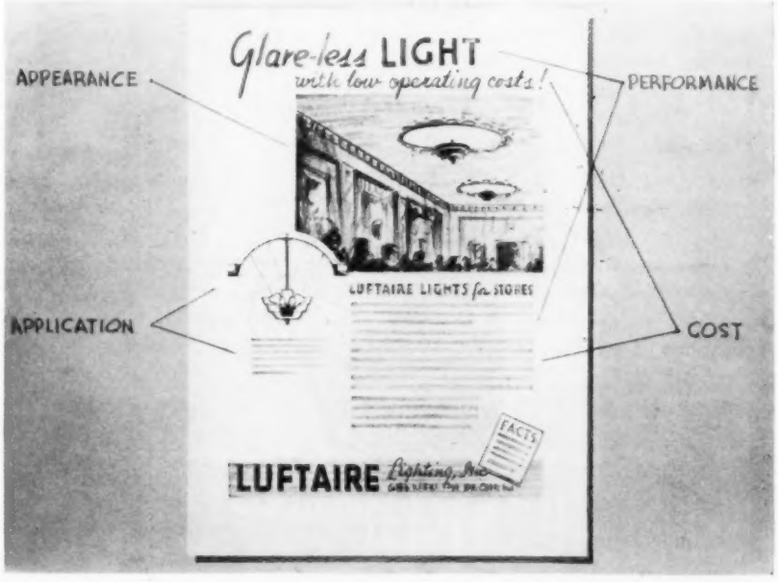
JULE ROBERT VON STERNBERG, R.A.

"A simple, pointed story . . ."

The architectural advertising that does the best selling job with me is that which tells a simple, pointed story. In other words, it helps solve one of my problems, either present or anticipated.

I dislike those advertisements that try to do too big a job all at once—that are crowded and confused with too much sales talk, too many "Eurekas," too much hysteria. I dislike advertising that never bothers to get to the point; I dislike advertising that is all cheese cake and no data; I dislike advertising that makes big claims yet never really bothers to back them up.

And here are things I'd like to see more of in architectural advertising: I'd like to see more emphasis on economy: space-saving, money-saving, time-saving. I'd like to see better illustrations—illustrations that show the product at work. I'd like to see more white paper in the advertisements. And I'd like to see less type—more pictures.



Ronald Allwork illustrates the four fundamentals of an advertisement addressed to the architect in the rough layout above. Name of manufacturer and design of product are, incidentally, pure fiction

WHEREVER toilet room traffic is heavy and usage severe, you're sure to find Whale-Bone-Ite Closet Seats. You will find they've been in service for years—five, ten, twenty, and more—and still look new! Don't be surprised when building managers say they haven't spent a penny for repairs of Whale-Bone-Ite Seats since installed. We have never heard of one wearing out!

COST NO MORE THAN OTHER HEAVY-DUTY SEATS

Any wonder Whale-Bone-Ite Seats are preferred for hotels, hospitals, schools—in all types of public and commercial buildings. They don't warp! They withstand severest abuse! They can be cleaned with strong disinfectants without harming their lustre.

EASY TO CLEAN—ALWAYS LOOK NEW

Molded of hard, resilient ebony plastic with a strong laminated wood core, Whale-Bone-Ite Seats have no surface coating to wear off. They're solid and smooth all over—moisture-proof—easy to clean, comfortable to use.

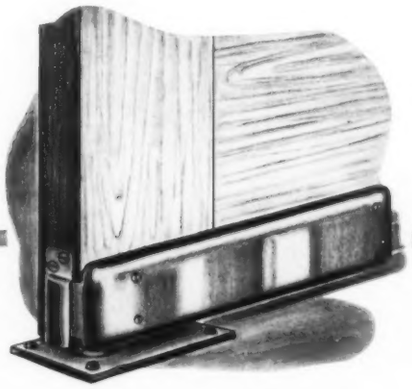
There is a suitable Whale-Bone-Ite Seat for every construction project on your boards. Refer to your Sweets Service for specifications—or, we will gladly send a complete catalog on request.

Brunswick

WHALE-BONE-ITE CLOSET SEATS

THE BRUNSWICK-BALKE-COLLENDER CO.
623 South Wabash Avenue, Chicago, Illinois
MAKERS OF FINE CLOSET SEATS FOR EVERY INSTALLATION

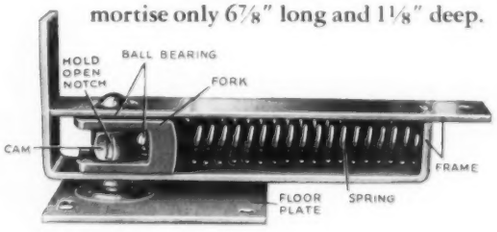
Stanley Floor Hinge



Double Acting Ball Bearing

Specify this hinge – No. 155 – for double-acting doors of residences. For doors 1⅛" to 1¾" thick, it will hold the door open at an angle of 90°. Equipped with hardened steel bearings which carry the thrust of the spring as well as the weight of the door. The reversible side plates are of reduced size and gracefully proportioned – a welcome departure from the "gingerbread" type of hardware.

Very little cutting out is required for its installation, as it takes a mortise only 6⅞" long and 1⅛" deep.



YOUR GUIDE TO GOOD HARDWARE

Stanley Catalog No. 61, giving full details on the complete Stanley Hardware line, will prove handy in preparing your specifications. Write for your free copy. The Stanley Works, New Britain, Connecticut.

STANLEY

HARDWARE FOR CAREFREE DOORS

IN NEW YORK'S FIRST

"Skyscraper" High School

Joan of Arc Junior High School, New York City. *Architects:*—Board of Education—Eric Kebbon and H. D. Hynds: *Heating and Ventilating Engineer:* Board of Education — Thomas F. Dwyer; *Heating Contractor:*—Harry Starkman & Bros., New York City.

. . . *it's* NATIONAL PIPE, *again!*

TOWERING high above 92nd Street near Columbus Avenue, this recently completed Joan of Arc Junior High School marks a radical departure from the type of school building familiar to New Yorkers. Here for the first time in the city's public school history, elevators are used to transport students to and from their class rooms.

In doing the unusual, the architects for this exceedingly modern structure spared no pains to select materials which promised to provide the utmost in quality and service. It was no accident that they chose NATIONAL Pipe for the steam supply lines, for here is a veteran pipe which has won its leadership by years of dependable service in many of the finest structures throughout the land.

It's a sound specification that reads NATIONAL Pipe for both plumbing and heating in any building, large or small. NATIONAL meets all the requirements of rigid standards. It's made of clean, strong, uniform steel. It's easy to thread and join. It lasts long in service. It's available in plain steel, copper steel, black or galvanized and DUROLINE—pipe of every grade and size, but all of one quality, the *highest*.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Export Company, New York

UNITED STATES STEEL

DON'T BE PUZZLED!

HERE ARE SIMPLE FACTS ABOUT WIRE DESIGNATIONS IN THE NEW N. E. CODE

Far greater flexibility and increased safety of electrical installations in conformity with modern electrical service standards are now possible because of the recognition and approval of new grades of building wire by the National Electrical Code in its 1940 Edition.

Select the grade you need from this list:

HAZACODE Type R—(Rubber-insulated. Limited to 50° C. operation) meets all requirements for "code" wire installations.

HAZARD WATERTITE Type RW—(Rubber-insulated, Water-resistant. Limited to 50° C. operation.) Approved for use in wet locations where formerly it was necessary to use lead covered wire.

HAZARD PERFORMANCE Type RP—(Rubber-insulated Performance grade—similar to former 30% grade. Permitted for operation at 60° C.) The higher operating temperature permits heavier current loadings or allows use of a smaller size conductor for a given loading.

HAZARD PERFORMITE Type RH—(Rubber-insulated Heat-resistant. A new grade permitted for 75° C. operation.) Has been used on a large scale under Federal Government Specs. J-C-106 and J-C-121. Permitted for general use—Higher operating temperature permits greater current loading or makes possible use of smaller conductors for same loading. Superior qualities make it advisable to select this wire for a wide range of normal uses and for hot locations, boiler rooms, steam tunnels etc.

HAZARD PERFORMITE Type RHT—(Rubber-insulated, Heat-resistant, Thin Wall.) Also approved for 75° C. operating temperature in sizes 14-8 inclusive. Type RHT has a smaller diameter than code wire. Approved for new wiring or rewiring.

HAZAKROME Type SN—(Synthetic Insulation—A new grade. Approved for rewiring in existing raceways only). Hazakrome is non-inflammable, has long life, is heat, moisture, chemical and oil resistant. Is much smaller in diameter than comparable code grades. Solves many problems concerned with modernizing electrical facilities inexpensively.

The Hazard line of building wires, manufactured in accordance with the new code standards, makes it possible for architect or contractor to "Specify Hazard" in any of these grades in full assurance of obtaining wires that satisfy the particular installation requirements for which they are designed and approved.

For complete information regarding the right Hazard wire for any installation write to Hazard Insulated Wire Works, Division of the Okonite Co., Wilkes-Barre, Pa.—offices in principal cities.

HAZARD BUILDING WIRES

(Continued from page 102)

Rock Wool Sealed Blankets

TO A WELL KNOWN LINE of rock wool insulation have recently been added rock wool sealed blankets. The blankets have a vapor barrier on the room side to resist condensation, and crepe kraft on the sheathing side. Advantages reported include permanence of application, sealage against vapor passage, few joints. The 3-in. thick blanket is 15 in. by 41⅓ ft. Medium (2-in. thick), 15 in. by 62 ft. Thin (1-in. thick), 15 in. by 103½ ft. Philip Carey Company, Lockland, Ohio.

Makes Painted Sheet Tougher

A NEW galvanized sheet in three base metals—pure iron copper alloy, copper steel, and steel—is now being made under a chemical and metallurgical process which has a dual intent: to protect the metal itself; and to promote adhesion of surface finish to the metal. Adaptability to paint, enamel, varnish, lacquer and other finishes is claimed, and tests are said to have demonstrated the effectiveness of the processing in the presence of abrasion, corrosive liquids, exposure to elements, excessive heat and severe cold, humidity and submersion. The metal is available in all sizes and gauges. Newport Rolling Mill Company, Newport, Kentucky.

Porcelain-Surfaced Siding and Shingles

ON A BASE of asbestos fibres a vitreous mineral surface has been fused to provide a new line of siding and shingles. The product is claimed to be hard as flint, cleanable with soap and water, fireproof, unaffected by acid or alkaline atmospheric conditions, and to resist erosion and abrasion. Tests are said to show that moisture and dirt do not penetrate the surface. Colors, reportedly permanent, are grey, red, black, green, and brown. Philip Carey Company, Lockland, Ohio.

(Continued on page 114)

A Short Cut to Your

CONSTRUCTION COST PROBLEMS

FOR PRELIMINARY ESTIMATES

Boeckh's Manual contains cubic and square foot costs on approximately 500 types of buildings with a total of over 7,000 specific base cost figures and in addition, thousands of specific cost variations.

All costs are keyed to local construction cost conditions through exclusive index conversion formulas—Boeckh's Manual never gets out of date if used with the conversion index.

Boeckh's Manual of Appraisal is now used by over 8,500 firms, among which are hundreds of architects and builders. This Manual is nationally recognized by Fire Insurance Companies and Mortgage Loan Agencies as a standard of building Construction Costs.

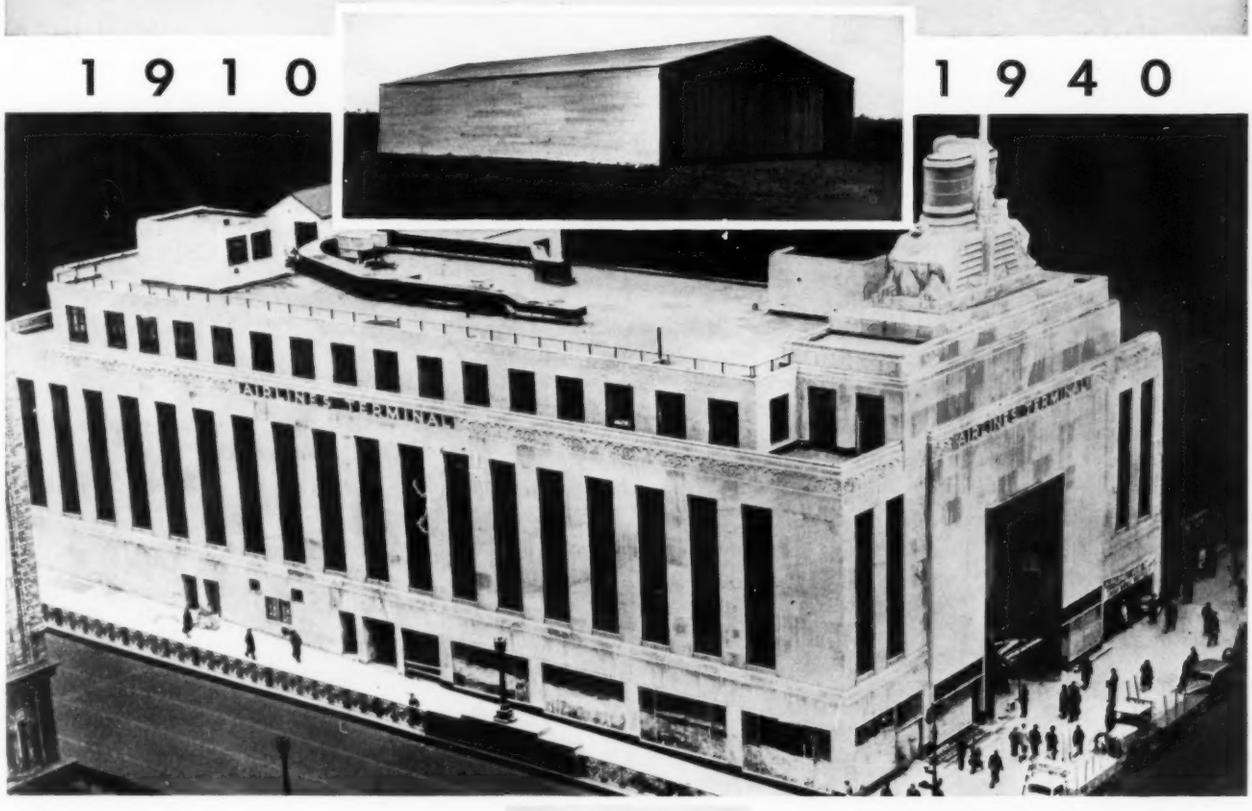
Boeckh's Manual of Appraisals and Pad of Work Sheets. Price shipping prepaid **$6**

Local Current Index Conversion Factors (each location). Price shipping prepaid **$1**

Order now, examine it for 10 days, then if you are not completely satisfied return the Manual and your money will be refunded.

E.H. BOECKH & ASSOCIATES
Consulting Valuation Engineers
AMERICAN BUILDING
CINCINNATI, OHIO

ORIGINAL WRIGHT BROTHERS HANGAR
. . . AND THE WORLD'S FIRST AIRLINES TERMINAL
BOTH RUBEROID-ROOFED



Wright Brothers made their first flight in 1903 at Kitty Hawk—and a new industry was born.

In 1910, the first Wright Hangar was built at Dayton, Ohio—and an exacting quality standard in roof protection was set for this new industry. The hangar was Ruberoid-roofed.

Since then, many airplane hangars and other buildings in the aircraft industry have been protected with Ruberoid roofs. The latest—is the world's first Airlines Terminal in New York.

The reasons for choosing Ruberoid are obvious. First, Ruberoid is nationally known for its rigid standards of quality. These standards are reflected in the amazing performance records of Ruberoid roofs everywhere. Second, Ruberoid has a full line of Ruberoid roofing products to meet the architect's specific needs.

For example, built-up roofs. Architects can choose not only the type, but the specifications best fitted for each job. Ruberoid makes all three major types: (1) asbestos, (2) asphalt and (3) coal tar pitch and felt. Specifications vary to meet problems caused by climate, fumes, fire hazards, etc.

Moreover, you can face these problems with complete protection. Among Ruberoid's built-up specifications, are roofs which, when applied by approved roofing contractors, may be bonded for 10, 15 or 20 years, for *both* materials and workmanship.

When you have a job on the boards where roofing counsel is desired, call in a Ruberoid engineer. His services are free . . . his information unbiased. The Ruberoid line of roofing materials permits him to recommend the type custom-built to conditions.

For popular specifications, consult Sweet's. For complete specifications, write us on your letterhead, please. Address Dept. AR-4. The Ruberoid Co. *Executive Offices:* 500 Fifth Avenue, New York.

Reg. U.S. Pat. Off.

RU-BER-OID ARCHITECTURAL PRODUCTS

ASBESTOS SHINGLES
ASBESTOS SIDINGS
ASPHALT SHINGLES
BUILT-UP ROOFS
ASBESTOS-CEMENT CORRUGATED SHEETS
ROOF INSULATION BOARD
ROCK WOOL INSULATION
ASBESTOS PIPE COVERINGS
WATERPROOF SHEATHINGS

RU-BER-OID
ROOFING AND BUILDING PRODUCTS

BEHIND THE RECORD

(Continued from page 6)

titled "How Mrs. Taylor Came to Appreciate the Architect," because we feel it points out exactly the service the client should expect of the architect. We congratulate Mrs. Taylor on having selected an architectural firm of great originality and ability, and we also congratulate Mr. Dinwiddie and his associates on having a client of marked intelligence and discrimination. The house appears delightful and . . .would, it seems, to me, be equally delightful in Florida.

. . . Let me assume that Mrs. Taylor requires . . . a loan from the Federal Housing Administration. Tragic would be her disappointment and hopeless her application for a loan from the Federal Housing Administration in this area. . . . I do not say that they would categorically refuse, but certainly the loan would be absurdly low and would be given only on condition that the design of the house was changed radically and in such a manner as would make Mr. Dinwiddie's heart sink.

To name but a few of their probable objections . . . I would mention the unsheathed cornice, fixed glass in the living room, the wood ceiling of the living room, door from the bedroom wing to the terrace, width of the garage, type of roofing, and finally the construction details that would be necessary to attain such simple charm and studied elegance. Finally and most devastating of all would be criticism of the FHA that the house lacks "conformity" and is "architecturally unattractive." You understand, of course, that we are in violent disagreement with all of these spurious standards, and intend in no way to criticize this particular job.

It further pains me to point out that the house designed by the contractor's draftsman could easily pass the FHA's standards with one or two minor changes. . . . We feel that the FHA would in this area effectively prevent Mrs. Taylor from having the house suited to her highly civilized requirements and we think that something ought to be done about it; exactly what we cannot say.

Here's the answer — as promised—to the problem in logic we set forth last month (p. 7). *The Designer's name is Smith.* The reasoning:

1. Smith cannot be the Draftsman, for a man can't beat himself at billiards. Therefore Smith must be *either* Designer or Office-Boy.
2. Robinson isn't the Office-Boy, because Mr. Robinson lives on Maple Street; and the client whose name is the same as the Office-Boy's lives on State Street.
3. Mr. Jones cannot be the Office-Boy's nearest neighbor, because he earns exactly three times as much as the Office-Boy and Mr. Jones' $4,000 salary is not exactly divisible by three.
4. Mr. Smith, therefore, is the Office-Boy's nearest neighbor, for Mr. Jones isn't and Mr. Robinson lives on Maple Street.
5. Mr. Jones is the only one of the three clients who *could* live on State Street. Thus the Office-Boy's name must be Jones (because the client on State Street has the same name).
6. Thus, if Smith isn't the Draftsman, and if Jones *is* the Office-Boy, Smith *must* be the Designer.

Corrections

HOLABIRD & ROOT should have been named as Associate Architects for the Federal Loan Agency Building in Washington. (AR 2/41, p. 43.)

OMAN & LILIENTHAL were the architects who designed the Florence Tarrson Inc. shop in Chicago. Hogan and Farwell, Inc., erroneously named, were the real estate brokers. (AR 2/41, p. 120.)

in 1918 an Architectural Sensation

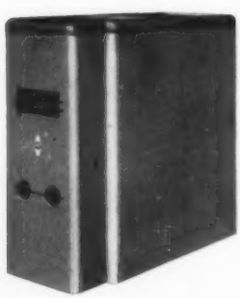
HALLIDIE BUILDING, *San Francisco* . . . The first all-glass (flush) front. Designed 23 years ago by the late Willis Polk. ☆ Named for the founder of San Francisco's cable lines.

...AND EVEN THEN *Payne* WAS A VETERAN IN GAS HEATING

Important to you is this fact: Year after year after year, PAYNE has concentrated on doing one thing superlatively well—the design and manufacture of *gas* heating equipment. ☆ When you specify PAYNEHEAT you back your own judgment with a reputation, a product, nationally accepted with absolute confidence. ☆ The reasons for this leadership will be instantly apparent when you check with your Gas Company or PAYNE Dealer. ☆ See Sweet's or Western States AEC Catalog. And write for our convenient AIA file.

FOR FURTHER INFORMATION SEE OUR CATALOG IN SWEET'S

Illustrated, the PAYNE Zoneair. *Also:* Forced Air Unit • Floor Furnace • Duplex furnace • Modern Console • Spacesaver Unit • Gravity Furnace.



PAYNEHEAT

MORE THAN A QUARTER-CENTURY OF GAS SPECIALIZATION

Payne Furnace & Supply Co., Inc., Beverly Hills, California

THE ARCHITECT SAYS...

about CHLORINATION

Arthur C. Holden, of Holden, McLaughlin & Associates, says:

"In the installation of chlorinating equipment for swimming pools, it is essential that the equipment be both properly designed and manufactured. It is no less essential that it be operated in accord with the principles of the design. If these principles are adhered to, the health of swimmers will be safeguarded and no irritation will be caused by the disinfectant. Proper design and manufacture are most essential for public pools. We have found that the Wallace & Tiernan Chlorinators can be depended upon to sterilize swimming pool water."

No other method of swimming pool sterilization offers the fourfold protection of proper chlorination—

- Sterilized water in the pool.
- A residual chlorine content available to cope with contamination introduced by the bathers.
- A margin of safety to take care of sudden increase in bathing load.
- A simple, quickly made colorimetric test for control of operation.

Architects everywhere agree with Mr. Holden that to realize these benefits of chlorination "It is essential that the equipment be both properly designed and manufactured," and, with Mr. Holden, "have found that Wallace & Tiernan Chlorinators can be depended upon to sterilize swimming pool water."

Write for the W&T Swimming Pool Series reviewing water treatments on several different types of pools.

For the chlorination of small water supplies such as those at suburban or country schools, private estates, etc., Wallace & Tiernan have designed a small W&T Hypochlorinator: simple, inexpensive, easy to operate. Bulletin 357 describes this equipment in detail. Write for a copy.

Photographs courtesy Swimming Pool Construction Co.

"SWIM IN DRINKING WATER"

WALLACE & TIERNAN CO. INC.

Manufacturers of Chlorine and Ammonia Control Apparatus

NEWARK, NEW JERSEY

Represented in Principal Cities

TRENDS IN BRIEF

(Continued from page 18)

shortage, may affect the use of brass but copper pipe can be substituted. Job bottlenecks may later develop in items not readily foreseen, such as construction equipment.

Meanwhile, there is not yet much occasion for changes in architectural specifications. While orders for aluminum trim on modern buildings might be changed to stainless steel, with some question about getting large quantities of that, supplies of basic building materials are adequate.

Lumber stock piles

With the passing of the peak of the first cantonment program, the pressure on lumber stocks has subsided. Prices have duly fallen and Federal officials no longer are snapping at the heels of the lumber men. In preparation for further cantonment work, the lumber industry is cooperating with the Army in building up stock piles to prevent peak-load shortages and consequent price jumps such as occurred last Fall.

The industry, in fact, urged this policy prior to the present cantonment program. Observers here think it would be wise for PBA and other construction agencies to take similar steps toward building stock piles adequate to meet any sudden acceleration in the defense housing program.

Post-war works

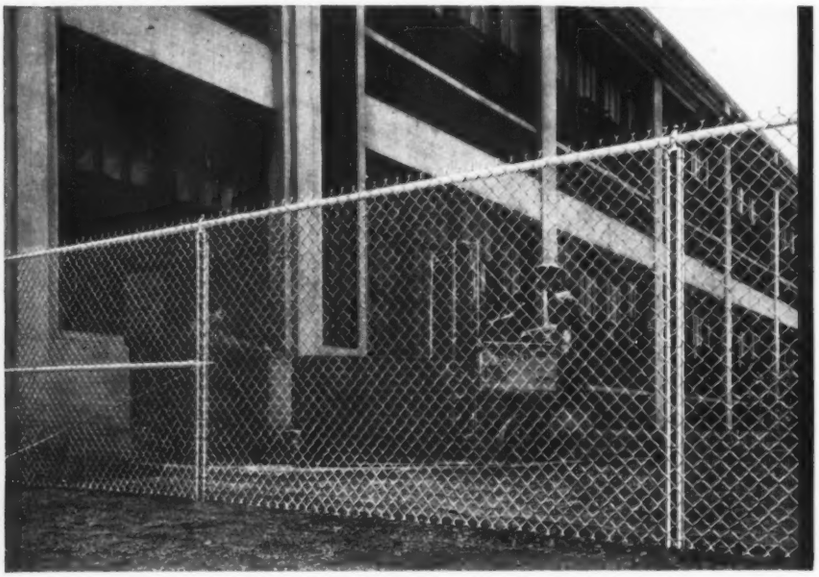
Extensive planning work has been done among the Federal agencies in preparation for measures to cushion the economic shock expected when peace comes and the huge defense programs are suddenly curtailed. Assuming a deflationary trend, either of the two spending theories—the Federal "investment" idea or the "compensatory" plan to offset the turn in the economic cycle—points to extensive outlays for public works. Thus the policies of the Federal Government will continue to be of the utmost importance to architects.

When peace comes, the Government will be faced with the problem of demobilizing hundreds of thousands of men from the barracks and the defense homes. It is not to be expected that the Government will turn these men out jobless, with the huge plant facilities and financial powers with which it is being implemented.

Some indication of the public works phases of the post war program can be read in the recent report of the National Resources Planning Board. Since this report is in routine fulfillment of old employment stabilization law to which the Board owes its authority for existence, it sets up a fairly explicit six-year program of $6,000,000,000. Advance steps such as purchase of sites and full arrangements for financing are advocated so that public works can start promptly when the defense effort tapers.

PAGE FENCE

America's First Wire Fence—Since 1883



ITS STRENGTH IS IN ITS SHAPE

★ Pound for pound of weight, Page Winged Channel Posts are strongest and render longest service. Other posts are merely adaptations of structural shapes used also for other purposes, and not developed especially for use with chain link fence. Expertly erected on these specialized posts, a Page Fence is up to stay.

Better posts are but one of the Page exclusive advantages. When you do business with a Page Fence distributor you are dealing with a local business man who owns his own plant—who is a long-experienced technical expert and renders reliable service, with permanent interest in every job. He is part of the largest fence engineering and erecting organization.

Only Page can supply Winged Channel Posts, and only Page offers a choice of four superior metals. Consult nearest Page distributor.

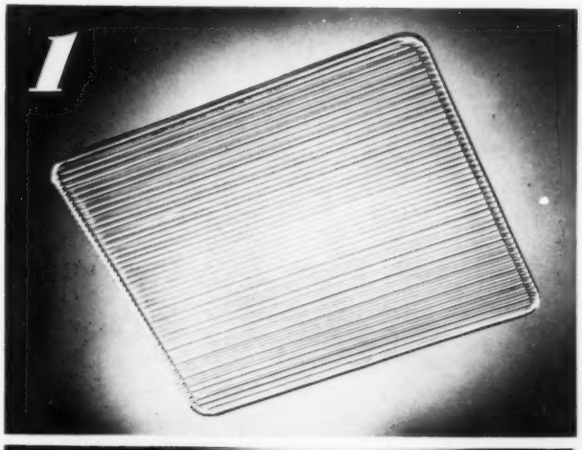
See Sweet's Catalog for detailed information, and write to PAGE FENCE ASSOCIATION, Monessen, Pa., or Bridgeport, Conn., Atlanta, Chicago, New York, Pittsburgh, San Francisco, for Page Industrial and Residential Fence Books shown here.

A PRODUCT OF PAGE STEEL & WIRE DIVISION—AMERICAN CHAIN & CABLE COMPANY, INC

HOLOPHANE CONTROLENSES *Control** Fluorescent Lighting . . And here are 3 lenses for 3 types of control

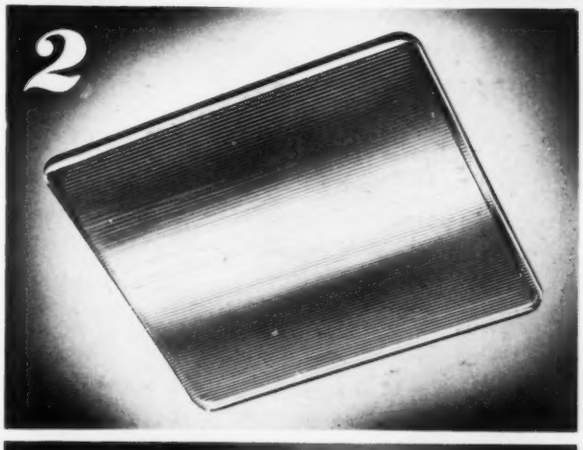
1 Intensive (*Normal*) Controlens

This type of Controlens has been designed for "uniform spacing" lighting on horizontal surfaces . . . Rooms of normal height . . .

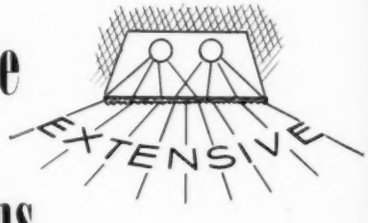


2 Concentrating Controlens

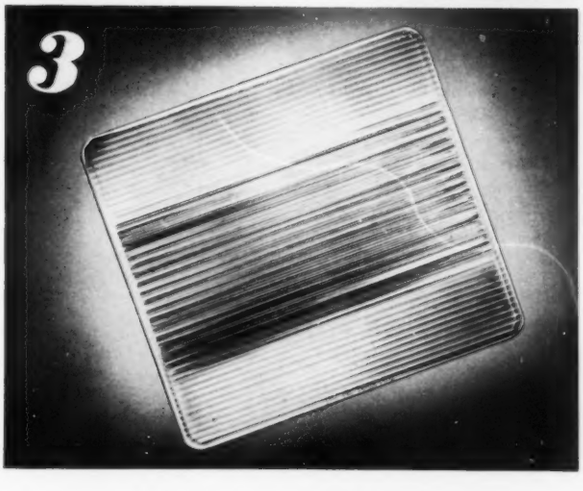
This type is desirable for concentrated accent lighting; also for general illumination in rooms with high ceilings . . . Or for offset beam lighting.



3 Extensive (*Wide Spread*) Controlens



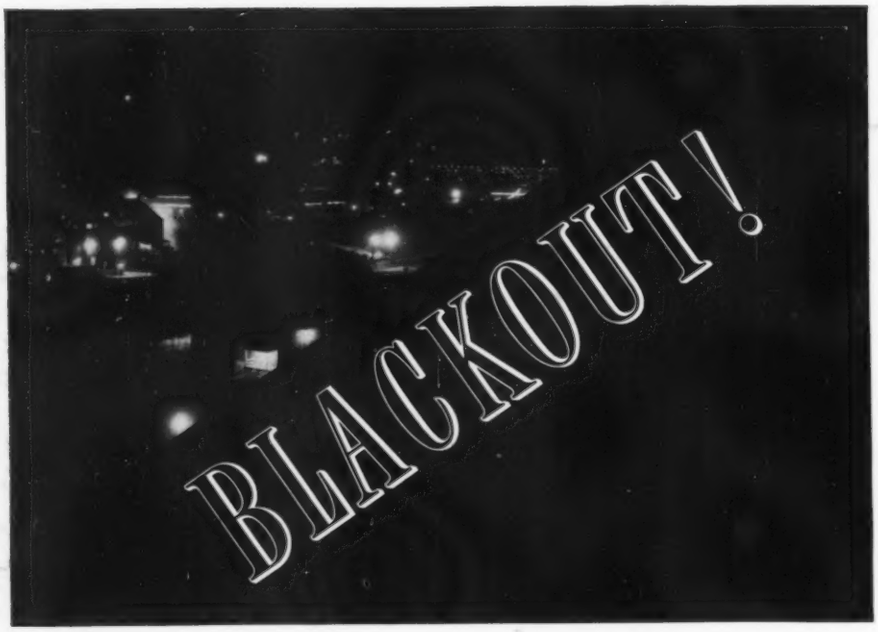
Adaptable for areas where illumination of vertical surface is required; or in low ceiling areas.



***Predicted Performance:** Fluorescent installations must be carefully planned. Once the installation is made, adjustments or corrections are extremely difficult. With Holophane Controlenses Fluorescent Lighting can be planned with precise scientific control. At the same time these lenses provide increased efficiency, economies in maintenance and enhance the decorative appearance of fluorescent fixtures.

Write for new book on fluorescent lighting — of particular usefulness to architects.

Holophane
COMPANY, INC.
Lighting Authorities—Since 1898
342 MADISON AVE.
NEW YORK CITY
THE HOLOPHANE CO. LTD.
385 Yonge St., Toronto, Canada



WITHIN the new blackout plants, most modern of America's defense factories, light, temperature, humidity and movement of air must meet your specifications as completely as steel and masonry. For here, more is involved than concealment. Here, work can be done to closer tolerances due to control of temperature, and the sabotage of corrosion is eliminated through control of humidity.

York experience dates from the first windowless building in America, the office building of the Hershey Chocolate Company, includes the spectacular S. C. Johnson Plant at Racine, Wisconsin, five of the nine huge blackout buildings of the new Douglas Aircraft Plant at Long Beach, California, and reaches its ultimate expression in the new Ford aircraft engine plant at Dearborn, Michigan, with a 4,400 h.p. air conditioning system.

To help speed the wheels, keep hands steady and eyes clear, protect materials in process and in storage, York experience is at your service. York Ice Machinery Corporation, York, Pennsylvania.

york refrigeration air conditioning

YORK AIR CONDITIONING AND REFRIGERATION

"Headquarters for Mechanical Cooling Since 1885"

DuPont Style News Service

Figure 4

New Paint and Decoration Guides

NEW "COLOR SELECTOR" portfolios are now being offered by two paint manufacturers. Both guides are handsomely gotten up and should prove extremely useful to architects and decorators as well as home owners. One portfolio shows large views of interiors, exteriors and details in many color schemes; the other provides large sheets of color, and transparent natural color photographs which can be superimposed over the color sheets. Sherwin Williams Company, 101 Prospect Ave., N. W., Cleveland, Ohio. E. I. Dupont de Nemours & Company, Wilmington, Del. (See figure 4.)

Throws Light on Ceiling

A LIGHTING FIXTURE has been designed to house two of the new 100-watt 60-in. fluorescent lamps, and to provide direct-indirect illumination where required in industrial locations. A series of apertures in the top of the reflector over each lamp permits a small percentage of light to pass upward. Good illumination on both horizontal and vertical surfaces is claimed, with minimized glare and shadow. The unit is also available without apertures. Benjamin Electric Mfg. Co., Des Plains, Ill.

Hangers for Lath—No Nails

PATENTED HANGERS are said to afford a quick way to apply ⅜-in. gypsum lath to walls without using nails, and to permit expansion and contraction without buckling or causing plaster to crack. V-W Company, 214 Oak Street, Columbus, Ohio.

NEWS OF MATERIALS AND EQUIPMENT

(*Continued from page 108*)

Industrial Fluorescent

HOUSING two 60" 100-watt fluorescent lamps, a new industrial fixture may be had as a standard open-end unit, with or without apertures, and as a closed-end unit with fill-in sections for continuous installation. For chain or pipe suspension; hinged top. The reflector is one-piece; grey porcelain enamel outside. Day-Brite Lighting, Inc., St. Louis, Mo.

Flat Storage of Blueprints

EFFICIENT STORAGE of blueprints, tracings, drawings, maps, artwork, etc., is simplified by a new welded steel blueprint cabinet which, it is claimed, has easy-gliding, non-jamming drawers opening to three-quarters of their depth. The files are available in 5-drawer and 3-door units, in four drawer sizes to take sheets up to 48 by 36 in. All-Steel Equip Co., Aurora, Ill.